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ABUSE OF REST AS A THERAPEUTIC MEASURE FOR PATIENTS WITH CARDIOVASCULAR DISEASE

CHAIRMAN'S ADDRESS

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Rest of injured parts and of diseased bodies is probably the oldest and most valuable of all methods of treatment, with the possible exception of psychotherapy. Nevertheless we seem from time to time to forget that this therapeutic method—like all others—may lead to untoward results when utilized either injudiciously or excessively. Within the past three decades there has developed a tendency to regard prolonged rest in bed and complete abstinence from normal economic activity as the sine qua non of the proper management of the more serious forms of heart disease. My purpose in the present report is to review certain experimental and clinical observations which seem to indicate that this concept may be unsound.

During the eighteenth and nineteenth centuries, while the basic framework for our present understanding of heart disease was being fashioned, little emphasis was placed on the desirability of rest as it is now employed. Such astute observers as Withering [1] and Heberden [2] scarcely mentioned it in their works. Indeed, Heberden cites a patient with angina pectoris "who set himself the task of sawing wood for half an hour every day and was nearly cured." Similarly, William Stokes [3] utilized graduated exercise for patients with various cardiac disabilities. His contemporaries were apparently not in entire agreement with him on this point, but if any of them advocated prolonged and rigid rest in bed as a method of treating heart disease I am not aware of it.

In view of the plans of therapy often employed at present in the treatment of diseases of the coronary arteries, the personal case histories of two famous physicians are of interest. In 1773 John Hunter had, at the age of 45, an attack of severe epigastric pain. This could have represented myocardial infarction, but from the description given by his brother-in-law Everard Home [4] the diagnosis seems doubtful. In 1785 he began to have severe anginal attacks at rest and within a few weeks experienced more prolonged periods of pain which were in all probability caused by myocardial infarction. From this time until his sudden death in 1793 he had numerous seizures induced by effort or by emotion. At autopsy he had extensive disease of the coronary arteries, calcification of the aortic valves and two large scars which presumably represented old infarcts. During his later years he continued to be quite active, did much of his best work and apparently never remained in bed for any long period of time. Nevertheless he lived at least eight and possibly twenty years after the onset of symptoms indicating serious heart disease. Is one to assume that he would have lived longer if he had lived the life of semi-invalidism to which we so often condemn the modern patient with "coronary symptoms"? Would his happiness have been decreased or increased by such a regimen?

The case history of Sir James Mackenzie [5] is perhaps even more striking. He began to have minimal attacks of angina of effort in 1907 and had severe attacks which probably represented infarction in 1908. He lived until 1925 and during this time had many seizures of mild pain and several severe and prolonged attacks. The autopsy revealed extensive atheroma of coronary branches and several healed infarcts. During the first fifteen years after the onset of his anginal attacks he continued to play golf until finally forced to desist by the progressive decline in exercise tolerance. Even so he led an active and useful life for seventeen years after myocardial infarction and, as far as I am aware, never spent more than a few days in bed at any time. Are we justified in assuming that he would have lived longer or enjoyed more happiness if he had been forced to remain in bed for several months after his infarction and if his permanent plan of living had been drastically restricted? Was the father of modern cardiology a poor therapeutist in regard to his own case? Questions such as these which permit no dogmatic answers should lead one to adopt an open mind regarding the desirability of prolonged and rigid rest in patients with cardiac disorders.

My own interest in the possibility that rest might be abused as a therapeutic method began in 1927, when I had occasion to visit a number of European clinics and to observe that patients with congestive failure were often allowed to sit up in chairs and to walk about the wards. At the time this seemed to be a shocking practice, but doubts so aroused were later strengthened when I learned that Sir James Mackenzie had handled patients in a similar manner.[6] During the next several years a large group of patients—both Negro and white—were under observation in the cardiac clinic at the Vanderbilt University Hospital. The scarcity of ward beds for Negroes forced one to treat all except the most urgent cases of heart failure in this race in the out-

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Read in a symposium on "The Abuse of Rest in the Treatment of Disease" before the Section on Experimental Medicine and Therapeutics at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 15, 1944.

1. Withering, William: An Account of the Foxglove, Birmingham, G. G. J. & J. Robinson, 1785.
2. Heberden, William: Commentaries on the History and Cure of Diseases, London, T. Payne, 1802.
3. Stokes, William: Diseases of the Heart and Aorta, Dublin, Hodges & Smith, 1854.
4. Home, E.: Hunter, John: A Treatise on the Blood, Inflammation and Gunshot Wounds, to Which Is Prefixed a Short Account of His Life by Everard Home, Philadelphia, T. Bradford, 1796.
5. Willius, F. A.: Cardiac Classics, St. Louis, C. V. Mosby Company, 1941, p. 795.
6. Mackenzie, J.: Diseases of the Heart, ed. 4, London, Oxford University Press, 1925, p. 313.

patient department, while most of the white patients were admitted to the wards as soon as evidences of heart failure were observed. After several years had elapsed I began to gain the impression that the number of old friends and familiar faces was greater in the Negro than in the white group. The matter was never studied statistically, but a little later the same general problem was approached somewhat differently by Williams and Rainey,[7] who analyzed the records at the Vanderbilt University Hospital for the immediate causes of death as found at autopsy in the patients with heart diseases during a ten year period. These authors found that relatively few patients were dying of an uncomplicated cardiac failure and that the three great causes of death in patients who were admitted to the hospital with this disorder were infarction of the lungs, pneumonia and uremia. Their work suggested that at least some of the chief causes of death in such patients represented conditions which tended to develop under a state of complete rest and which might have been to some extent prevented by mild muscular activity.

Following the studies of Williams and Rainey, observations were carried on during a period of several years, first at the Vanderbilt University Hospital and later in the North Carolina Baptist Hospital. In these studies an attempt was made to divide alternate cases of congestive failure into two groups, "three week cardiacs" and "three day cardiacs," the designations referring to the duration of time after admission in which a period of rigid rest was enforced. Although several hundred patients were so studied, the groups were not large enough to warranat statistical analysis, since such variables as age, sex, race, etiologic factors, severity of congestive failure and complicating diseases made accurate comparison impossible. The only information which came from the study was the conclusion that the "three day cardiacs" were happier patients and that no evidence of higher mortality was found in this group.

During the fifteen years in which the effects of rest have been studied in subjects with congestive failure, a large number of patients with myocardial infarcts have been observed, and I have been impressed with the frequency of a second myocardial infarct as well as the high incidence of pulmonary infarction occurring after two or more weeks of rigid bed rest. However, there has been no control group who have been allowed to follow the self-prescribed treatment of John Hunter and Sir James Mackenzie, in terms of forsaking the bed and resuming activity as soon as the subjects desired it. Hence, here again no definite conclusions can be drawn as to whether prolonged and rigid restriction of activity increases or decreases mortality. However, one point has become increasingly clear and that has been that the incidence of postinfarctional cardiac neurosis is decidedly greater in those subjects who have been kept in bed for several months.

The clinical studies which have been described have been inconclusive because of the difficulty in controlling all of the many variable factors. For this reason an experimental attack on the problem was undertaken two years ago at the Bowman-Gray School of Medicine in conjunction with Dr. Wilbur C. Thomas.[8] The work has been reported in detail elsewhere and will only be summarized here. Standardized myocardial injury was induced in rats by burning the surface of the left ventricle, and the animals were subjected to various types of postoperative care. Those rats which were treated by extreme limitation of muscular movement through the use of cages so small as almost to fit the animal and to prevent turning around exhibited much higher mortality than did the controls who were allowed to wander at will in rat cages of the usual size. (It is recognized, of course, that such an experiment is more analogous to the use of the strait-jacket than to enforced bed rest in patients.) When the spontaneous activity of rats was studied by the use of the optional treadmill, it was found that most of the animals voluntarily chose to take as much exercise per day within five to seven days after cardiac injury as they had been undertaking during the preceding control period of one or two weeks. Observations were then made on rats in which muscular activity was enforced by making the animal swim for periods of ten to fifteen minutes several times daily. It was found that if one waited as long as even a few days after cardiac injury, such relatively strenuous muscular exercise did not cause any significant increase in the mortality. Obviously, this does not mean that patients with acute myocardial injury should be allowed strenuous exercise within such a short period, because the rate of healing processes in the heart is considerably faster in the smaller animal than in man. However, the results did appear to be fairly conclusive in indicating that under controlled experimental conditions excessive restriction of muscular activity was harmful, while the return to normal activity within a few days seemed to exert no detectable injurious effects. The results, therefore, support the clinical impression previously arrived at on the basis of less carefully controlled observations and have led me to question seriously the validity of current methods of handling patients with the graver forms of heart disease. Final conclusions are not justified until further observations on patients have been made, but in the meantime one may perhaps venture to enumerate certain theoretical considerations concerning the advantages and disadvantages of prolonged and rigid rest in bed.

Among the hypothetical advantages of prolonged rest in bed following myocardial infarction are the following:

1. Decreased liability to cardiac rupture. This consideration is probably especially important during the first two weeks, because most instances of rupture occur within this period.

2. During circulatory collapse the upright position aggravates cerebral anoxia. However, in most patients circulatory collapse of serious degree has disappeared within the first week or two and likewise, from this standpoint, there is rarely need for rigid rest of more prolonged duration.

3. One might expect that prolonged rest in the recumbent position would lead to a firmer and smaller scar. This, however, can be questioned because the cardiac work per beat is probably no greater and may be somewhat less in the sitting than in the recumbent posture, the decline in blood pressure in the recumbent position being usually at least counterbalanced by the increased stroke volume in this posture.

Among the theoretical disadvantages of prolonged rest in bed in patients with myocardial infarction are the following:

1. Given a tendency toward the development of congestive heart failure, edema of the lungs will tend to occur more readily in the recumbent position.

7. Williams, R. H., and Rainey, J.: Cause of Death in Patients with Congestive Heart Failure, Am. Heart J. 15: 385-394, 1938.

8. Thomas, W. C., and Harrison, T. R.: The Effect of Artificial Restriction of Activity on Rats with Experimental Myocardial Injury, Am. J. M. Sc., to be published.

2. Rigid restriction of activity reduces flow of blood to a minimum and may tend to favor development of thrombi either in the venous system with subsequent pulmonary infarction or in the arteries and more especially in branches of the coronary system other than the ones originally affected. Hence, both pulmonary infarction and a second myocardial infarction are frequently observed in patients subjected to unusually prolonged and rigid rest.

3. "Hypostatic pneumonia" is especially apt to occur in elderly subjects who remain in bed over a long period of time.

The discussion thus far has been centered around the physical consideration of prolonged rest and indicates that there are theoretical reasons both for and against such a method of treatment. However, not only the somatic but also the psychologic factors need to be taken into account. Once an individual has recovered from the initial phases of myocardial infarction and has reached an asymptomatic state, the normal desire to resume activity occurs and each additional week of complete rest can usually be achieved only at the expense of increased urgency on the part of the physician. Such a sequence of events leads many patients to exaggerate to themselves the seriousness of their physical condition and all too frequently results in the development of a postinfarctional anxiety state. It therefore is common to observe rather severe manifestations of "cardiac neurosis" induced not so much by the "heart attack" but by the physician's management of the heart attack. One sees many patients who live through years of psychic invalidism brought about as the result of the physician's insistence on excessive caution during a period of many months. Even if we could be certain that such excessive caution would prolong life in an occasional patient—and there is grave doubt concerning this—there still remains the question as to whether the objective so achieved merits the unhappiness produced in a larger group of patients by rigid restriction.

SUMMARY

A review of some recent experimental evidence and certain clinical considerations leads to the following general conclusions:

1. Extreme restriction of body movement causes increased mortality in animals with experimental myocardial injury.

2. There is no proof that rest in bed carried out for many weeks after symptoms have disappeared is of value in the physical management of the patient with congestive failure, angina pectoris or myocardial infarction. The available evidence, while perhaps not conclusive, points to the contrary, and more especially so if the recumbent posture is enforced while the patient is kept in bed.

3. From the psychic standpoint there is a definite disadvantage in the enforcement of a rigid regimen after the acute phase of the illness has subsided.

4. Until more definite information is available, the following tentative suggestions are offered for a plan of treatment which obviously requires modification according to the status of the individual patient:

(*a*) Persons with congestive heart failure should be allowed out of bed for several hours a day, as soon as severe dyspnea at rest has subsided.

(*b*) Following myocardial infarction, recumbency should not be prescribed for a longer period than two to three weeks after the more acute and alarming symptoms have subsided. The recumbent position should not be enforced on patients who are more comfortable sitting. Other things being equal, it would appear wise to allow elderly patients out of bed sooner than younger ones.

(*c*) Rest in bed for more than a day or two at a time probably has no place in the treatment of angina pectoris except in those patients who are especially liable to develop in the immediate future myocardial infarction, as indicated by increasingly frequent and prolonged attacks at rest.

(*d*) In all patients with the severe forms of heart disease activity should be kept below the symptomatic threshold, i. e. should be less than that amount which induces dyspnea or pain.

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THE ABUSE OF REST IN OBSTETRICS

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There are doubtless many ways in which rest may be abused in obstetrics and gynecology, ways of clinical import. But in view of the critical times through which our country is passing, it would seem particularly appropriate to consider two abuses of rest which not only bear on the health and happiness of every married woman but carry also far reaching implications in regard to the present and future welfare of our nation. I refer, first, to the abuse of rest as it affects pregnant women in industry and, second, to the abuse of rest of the female reproductvie organs as it pertains to so-called "child spacing."

It has been estimated that about 18 million American women are employed today in industry, or some 36 per cent of all our women of 15 years and over. Of this group 6½ to 8 million, or 13 to 16 per cent of all women, are being utilized by war industries alone (Hesseltine[1]). Since more than 50 per cent of the women employed are married,[2] a substantial number of pregnancies is to be expected. But just what the actual incidence of pregnancy may be among these women is difficult to ascertain with any degree of precision because of the rapid turnover of workers, particularly if pregnancy occurs, and also because early gestations may be concealed and even denied; moreover, the statistics vary widely in different establishments. In 1941 one large industrial concern employing 20,000 women reported an annual incidence of 72.8 pregnancies per thousand women workers.[2] Pregnancy rates reported by some firms are much lower than this and range upward from 15 pregnancies per thousand women workers annually. Even, however, if the very minimal figure obtainable is used, it would appear that some quarter of a million women engaged in industrial work become pregnant in the course of a year, and the actual number may well be several times this.

The problems which would be presented by pregnant women in industry were anticipated by several

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2. Silverman, Charlotte: Maternity Care and Maternity Care Practices in Industry, West. J. Surg. **52**: 152, 1944.

agencies shortly after Pearl Harbor. Thus in July 1942 the Children's Bureau and the Women's Bureau of the U. S. Department of Labor, in consultation with a group of representative industrial hygienists, women personnel directors and obstetricians, met and recommended certain standards for maternity care in industry;[3] and shortly afterward the Committee on Health of Women in Industry of the Section on Obstetrics and Gynecology of the American Medical Association drafted similar recommendations.[4] Both bodies agreed that, ideally, the pregnant woman should not be employed. But they were also unanimous in their belief that the employment of pregnant women in industrial plants was entirely feasible and safe, provided certain safeguards could be thrown about them. Among these safeguards were facilities for adequate antepartum care, avoidance of work on the night shift, rest periods, the avoidance of occupations which demand heavy lifting, continuous standing or a good sense of bodily balance and, finally, a minimum of six weeks' leave before delivery.

In whatever class of society, a sedentary, unoccupied life is not conducive to the health of the expectant mother. In World War I, when large numbers of pregnant women were employed in Great Britain in munition and other factories, medical witnesses agreed that light factory work was not prejudicial to the health of expectant mothers;[5] moreover, in a study carried out by the Women's Industrial Council of that country on 934 women industrial workers the conclusion was reached that "there is practically nothing to choose in quality of maternity care between those who go out to work and those who stay at home."[5] In the present war O'Sullivan and Bourne have made similar observations on a series of pregnant women in a factory doing specialized work in London and have reached similar conclusions.[6]

In view of the recommendations of the two American committees mentioned and in the light of the British experience with employed pregnant women in this and the last war, it might appear that the problem needs no further discussion since it seems to have been clearly established that it is just as safe, with certain reservations, for pregnant women to work in industrial plants as it is for them to work at home. Actually, in this country at least, the problem is far from solved for the very cogent reason that our industrial plants, in the main, will have nothing to do with pregnant women and summarily discharge them as soon as pregnancy is discovered. In a valuable recent survey of seventy industrial establishments, Charlotte Silverman[2] found that among the sixty-two firms which had established some kind of a maternity program the policy in 50 per cent was dismissal on notification or discovery of the pregnancy or during the first three months. The chief basis for this regulation is fear of the legal responsibility associated with the employment of pregnant women, especially the concern that the occurrence of abortion may be attributed to work done in the factory. As a matter of fact, in Silverman's entire survey she was able to learn of only 1 instance in which a worker charged that abortion had occurred as the result of her employment.

From the point of view of the industrialist and the nation's manpower, this policy of excluding pregnant women from industrial plants eliminates from utilization a large number of willing, valuable and skilful workers. From the point of view of maternal welfare in this country it causes workers to conceal their pregnancies, whereby they forfeit the advantages of early antepartum medical attention; and, in not a few instances, it throws them into the hands of the criminal abortionist. Furthermore, it fosters an unwholesome attitude toward maternity and tends to make mandatory the use of contraceptive procedures, all at a time when our nation will be needing these babies.

This abuse of rest imposed on pregnant women by most industrial concerns is an unjust and unnecessary penalty for motherhood and stands in need of correction. As a step toward this end, Miss Caroline G. Olsen, R.N., has prepared a "Suggested Pregnancy Adjustment Plan for Women in Industry"[7] which merits wide consideration by physicians and industrialists alike. Her program is a concrete and workable protective plan for the supervision of women in industry in such a form that industrial plants should be able to put it in force without serious difficulty. It is to be hoped that through this and other means industrialists may become aware of their responsibility in this important problem.

The second abuse of rest in obstetrics concerns itself with the purported necessity of several years' rest between pregnancies, if the best interests of mother and child are to be served. Based on an observation made by Woodbury[8] in 1915 this teaching that babies are less likely to survive if born at intervals of less than two years has had wide circulation and has become both to the physician and to the public almost an axiom of maternity. It is responsible, more than any other doctrine, for the tendency to procrastinate childbearing and, in turn, this procrastination is responsible, more than any other factor perhaps, for the low birth rate among certain very desirable social and income groups. In a recent statistical study which has been reported in detail elsewhere,[9] it has been shown that: 1. Infants born from twelve to twenty-four months after a previous viable delivery (that is, during the second year) have at least as low a stillbirth and neonatal mortality as do infants born after longer intervals. 2. The longer the interval between births, the more likely the mother is to suffer from some form of hypertensive toxemia of pregnancy. The incidence of this complication is lowest when the interval is twelve to twenty-four months, significantly higher when it is twenty-four to forty-eight months, and much higher when it exceeds four years. 3. In patients who have had a previous hypertensive toxemia of pregnancy, the likelihood of repetition becomes progressively greater as the interval becomes longer. 4. The incidence of premature labor, anemia, postpartum hemorrhage and puerperal infection is no greater when the interval is twelve to twenty-four months than when it is longer, nor are mothers in this brief interval group less able to nurse their babies. The weight of the mature babies was approximately the same regardless of the interval.

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These recent findings so contradict the old, deep rooted teaching that frequent childbearing is dangerous, as to make them seem on first consideration rather incredible. Yet they are based on two separate investigations, one covering over 5,000 cases and the other over 33,000, and their statistical validity is beyond question. Moreover, if they are considered in the light of maternal and fetal mortality rates according to the age of the mother they appear altogether logical and, indeed, are exactly what one would expect. Child spacing, by definition, means maternal aging; and after a certain optimum period, probably in the early twenties, maternal aging means inevitably somewhat higher risks both to mother and to child. All experience and all statistics support this statement. Whatever advantage is gained by a rest period of several years between births seems to be offset and in some respects more than counterbalanced by the aging factor, for it must never be forgotten that the most important talisman which a childbearing woman can possess is youth.

THE ABUSE OF REST AS A THERAPEUTIC MEASURE IN SURGERY

EARLY POSTOPERATIVE ACTIVITY AND REHABILITATION

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Rest, as a therapeutic measure, is fraught with hazard. Prolonged periods of recumbency in bed are anatomically, physiologically and psychologically unsound and unscientific. Conversely, early restoration of medical and surgical patients to normal life is an essential feature of modern convalescent supervision. Prompt postoperative activity and walking provide manifest, safe and agreeable modifications in customary convalescent care by which ready rehabilitation may be achieved in the realm of surgery.

The desirability of such a program for patients of advanced years has long been recognized; surgical wounds heal firmly even though early postoperative activity is encouraged. Infants and young children cannot be kept quietly at rest in bed after operation, yet postoperative hernias are not common. Utilization of this knowledge in the management of patients between the extremes of life promotes an equally uneventful convalescence. Early rising from bed and walking preclude the protracted period of inertia which traditionally follows in the wake of surgery and encourage the prompt resumption of normal activity.[1]

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PRESENTATION OF DATA

My purpose in this report is to present observations on the postoperative convalescence of 100 consecutive patients who were allowed to sit in a chair and to walk on the first day after major operations, and to compare these studies with similar observations on an equal number of consecutive, unselected patients who remained in bed for the traditional period of ten to fifteen days after operations of the same type and magnitude.

For the sake of simplification the operative procedures have been limited to hernioplasty for inguinal, femoral, umbilical, epigastric and incisional hernias; appendectomy for acute appendicitis, including cases of perforation with abscess and peritonitis; cholecystectomy with and without exploration and drainage of the common duct, and hysterectomy and other major pelvic operations performed through an abdominal incision. The patients in both groups were all over 12 years of age.

The temperature and pulse rate during the postoperative convalescence, the number of days of confinement to bed, the length of time spent in the hospital and the total duration of the convalescent period have been chosen as criteria for comparison. The convalescence is considered as beginning with the first postoperative day and continuing until the patient resumed full activity at the work which was interrupted on entrance to the hospital for surgical treatment.

The comparative studies after each type of operation are presented graphically and in tabular form. The total cases are also discussed in their entirety.

1. *Hernioplasty.*—This group includes 39 patients who were up and walking on the first day after operation and an equal number who followed the traditional regimen of twelve days in bed after repair of a single rupture and fourteen or more after bilateral or ventral hernioplasty.

Presented in chart 1 are curves representing rectal temperatures and pulse rates before and during the first ten days after operation. These were plotted by averaging the highest levels recorded for every patient in each category on each day. They thus represent maximal elevations during the convalescent period. No significant variations are apparent in either the temperature or the pulse rate of the early and late patients.

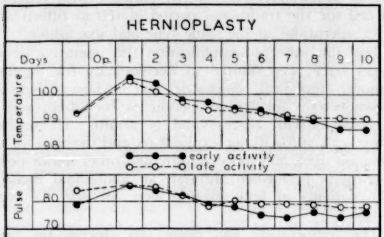
The types of hernias, the average and extreme ages of the patients, the number of days in the hospital and the total weeks of convalescence are also tabulated in chart 1. Those patients who were permitted early activity spent an average of 9.1 days in the hospital and required 5.6 weeks for convalescence. Seven of these hernias were complicated by incarceration or strangulation of the omentum or intestine. The patients in the control series averaged 15.2 days in the hospital and did not return to work until ten weeks after operation. Incarceration or strangulation was a complicating factor in 5 cases.

All but 3 patients have been reexamined in the follow-up clinic at varying intervals. No recurrences have developed among those who were up on the first postoperative day; 1 inguinal and 1 femoral hernia recurred among the patients who remained recumbent for twelve days or more.

2. *Appendectomy.*—The diagnosis of acute appendicitis in all cases was supported by microscopic examination of the appendix. Among the 22 patients who were allowed out of bed on the first postoperative

day were 1 abscess and 4 cases of local peritonitis; among the same number of controls were 5 cases of peritonitis of comparable severity; all were confirmed by positive bacteriologic cultures.

McBurney and right rectus incisions with and without drainage were used in both groups (chart 2).



Number and Variety of Cases	P.O. Activity: early	late
Unilateral Inguinal Hernia	29	29
Bilateral Inguinal	5	1
Unilateral Femoral	1	3
Inguinal and Femoral	1	0
Epigastric or Umbilical	1	4
Postoperative Ventral	1	1
Inguinal and Postoperative Ventral	1	1
Total	39	39
Additional Data		
Average Age of Patients	51.1	41.8
Extremes of Age	16-85	18-80
Days in Bed (average per patient)	1.0	13.0
Days in Hospital	9.1	15.2
Weeks of Convalescence	5.6	10.1

Chart 1.—Clinical and additional data relative to 39 patients who were out of bed and walking on the first postoperative day after herniaplasties, compared with an equal number who remained recumbent for thirteen days.

The postoperative convalescence of those patients who were allowed to sit in a chair and to walk on the first postoperative day was uncomplicated. Their mean temperature and pulse rate were consistently lower than were the temperature and pulse of those who remained in bed for an average period of 9.8 days (chart 2). Postoperative residual intraperitoneal abscesses developed in 2 of the latter group; there were none among the patients who were ambulatory early.

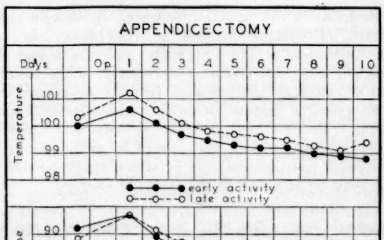
It is significant that the patients who were activated promptly returned to work in 4.8 weeks, while those who remained in bed for the customary convalescent period did not resume their usual occupation until 8.7 weeks after operation.

3. *Cholecystectomy; Choledochostomy.* — Fourteen patients were ambulatory on the first day after operations on the biliary tract; compared with these is an equal number who remained in bed for an average period of 15.3 days. Cholecystectomy was performed through an oblique subcostal incision six times in the former group and five times in the latter; through a vertical right rectus incision twice in the first and four times in the second group. All wounds were drained with a cigaret wick down to the foramen of Winslow. In addition to cholecystectomy, the common duct was explored and drained six times in the ambulatory group and five times in the control series. Four of the former were visibly jaundiced at the time of operation; all wounds healed firmly. One patient who was not icteric developed a late incisional hernia subsequent to discharge from the hospital. Two such hernias occurred in patients who remained in bed sixteen and twenty days after operation. All 3 ruptures were located at the medial angle of oblique subcostal incisions.

The mean temperature and pulse rate of the patients who were up on the first postoperative day were significantly lower than were those of the patients who remained in bed. Their convalescence in the hospital was materially shortened and their total average period of rehabilitation was reduced one half by early postoperative activity (chart 3).

4. *Abdominopelvic Surgery.*—In this group are 25 patients who were up and walking on the first postoperative day and an equal number who remained in bed for an average of 13.4 days. The lesions and abnormalities which required operative therapy are tabulated in chart 4. Supravaginal or panhysterectomy was performed ten times in the former group and eight times in the latter; salpingectomy, oophorectomy or salpingo-oophorectomy without removal of the uterus, twelve times in the early group and eight times in the late. Only 1 patient was allowed up on the first day after repair of a cystocele, rectocele and prolapse.

The average age of the patients in the early and control series was almost exactly the same. The length of time spent in the hospital after operation and the total period of convalescence for the patients who were allowed early activity were 11.7 days and 6.7 weeks respectively; for those whose regimen followed the former temporal pattern, the averages were 16.7 days and 11.6 weeks.



Cases of Appendicitis	P.O. Activity: early	late
Acute or Gangrenous	17	17
Acute with Abscess	1	0
Acute with Peritonitis	4	5
Total	22	22
Incisions		
McBurney	14	10
Right Rectus	6	9
McBurney with Drainage	1	3
Right Rectus with Drainage	1	0
Additional Data		
Average Age of Patients	33.7	27.1
Extremes of Age	13-79	15-54
Days in Bed (average per patient)	1.0	9.8
Days in Hospital	8.5	13.7
Weeks of Convalescence	4.8	8.7

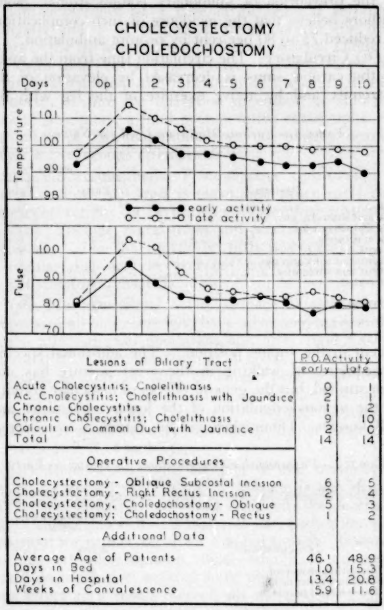
Chart 2.—Clinical and additional data relative to early and late activity during convalescence from appendectomy for acute appendicitis.

Composite graphs of the temperature and pulse rate are presented in chart 4.

5. *Total Cases.*—All operations were of major magnitude; many were performed as emergencies; others were necessitated by the presence of mechanical abnor-

malities, acute or chronic inflammatory lesions, tuberculosis or neoplasm.

The mean age of the total group of 100 patients who were permitted to sit in a chair and to walk on the first day after operation was 43.4 years. The age of an equal number of control patients was 38.7 years; this group



Lesions of Biliary Tract	P.O. Activity early	late
Acute Cholecystitis; Cholelithiasis	0	1
Ac. Cholecystitis; Cholelithiasis with Jaundice	2	1
Chronic Cholecystitis	1	2
Chronic Cholecystitis; Cholelithiasis	9	10
Calculi in Common Duct with Jaundice	2	0
Total	14	14
Operative Procedures		
Cholecystectomy - Oblique Subcostal Incision	6	5
Cholecystectomy - Right Rectus Incision	2	4
Cholecystectomy, Choledochostomy - Oblique	5	3
Cholecystectomy; Choledochostomy - Rectus	1	2
Additional Data		
Average Age of Patients	46.1	48.9
Days in Bed	1.0	15.3
Days in Hospital	13.4	20.8
Weeks of Convalescence	5.9	11.6

Chart 3.—Data relative to early and late activity following cholecystectomy and choldedochostomy.

averaged 12.7 postoperative days in bed. The ambulatory patients spent 10.3 days in the hospital, while those who followed the traditional convalescent program averaged 16.1 days (chart 5). This represents a saving of 580 hospital bed-days. In a locality where many of the patients live close at hand, this economy of beds may be greatly augmented by even earlier discharge from the hospital. Cutaneous sutures may be removed at home or in the outpatient department. Such an individual is well able to travel short distances by automobile on the third or fourth postoperative day. In rural areas, where transportation is a problem, such premature dismissal is not feasible.

The average period of convalescence after early activity was 5.7 weeks; after traditional postoperative management, 10.3 weeks. These figures indicate that, by the elimination of deconditioning secondary to a period of ten to fifteen days of recumbency following major surgery, the patient may return with comfort and safety to his usual occupation four and one-half weeks earlier than has been customary when traditional routine is followed.

If the temperature and pulse rate are regarded as accurate indexes of convalescence, such early activity is in no way deleterious (chart 5). However, other postoperative complications may arise which are not reflected in the clinical chart.

6. *Postoperative Complications.*—Postoperative complications may be classified as local (those which involve the wound and adjacent tissues), pulmonary, cardiac, vascular, genitourinary, gastrointestinal and general. Following this classification, the incidence of complications which were observed in these two unselected groups of 100 cases each is given in table 2.

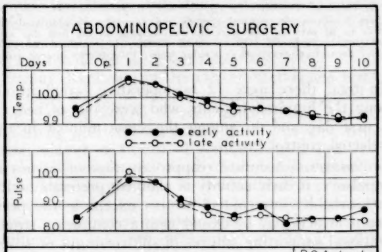
No local complications of major significance occurred because of early activity. No wounds disrupted. One incisional hernia developed several months after operation, an incidence of 1 per cent. One infection was strictly an operative mishap. The 2 hematomas were of minor importance but may conceivably be attributed to early ambulation. Two incisional hernias, 2 recurrent hernias, 1 hematoma and 1 silk sinus occurred among the patients who were kept recumbent for the customary postoperative periods.

Serious pulmonary complications were likewise more common among the patients who remained in bed (table 2).

No cardiac complications were observed among the ambulatory patients. In this group were 8 persons between 70 and 80 years of age and 2 who were over 80 years old.

The incidence of vascular complications was reduced but not eliminated. This phase of the subject is discussed in some detail later.

Postoperative inhibition of the bladder was rather common in both groups. It is of significance, however,



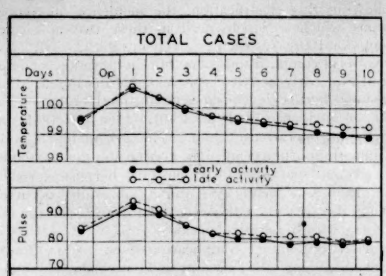
Lesions of Pelvic Viscera	P.O. Activity early	late
Fibromyomata of Uterus	9	4
Carcinoma of Uterus	0	2
Tuberculosis of Uterus and Tubes	1	1
Retroversion of Uterus	2	1
Cyst or Carcinoma of Ovary	6	3
Salpingo-oophoritis	2	1
Tubo-ovarian Abscess	1	2
Tubal Pregnancy	1	0
Endometriosis	2	1
Uterine Bleeding, cause unknown	0	1
Cystocele, Rectocele, and Prolapse	1	9
Total	25	25
Additional Data		
Average Age of Patients	38.4	38.0
Days in Bed (average per patient)	1.0	13.4
Days in Hospital	11.7	16.7
Weeks of Convalescence	6.7	11.6

Chart 4.—Data relative to early and late activity after pelvic surgery through an abdominal incision.

that in the ambulatory group the difficulty in voiding usually occurred during the night of the day of operation. Only 2 patients required subsequent catheterizations after they were up and about. Repeated catheterizations were much more frequent among the patients whose convalescence was spent in bed.

Postoperative dilatation of the stomach and fecal impactions occurred only in this group.

Fever which could not be explained by reaction to operation or to the disease for which operation was performed was observed in 5 patients among the recumbent group.



Total Cases	P.O. Activity: early	late
Herniaplasty	39	39
Appendicectomy	22	22
Cholecystectomy; Choledochostomy	14	14
Abdominopelvic Surgery	25	25
Total	100	100
Additional Data		
Average Age of Patients	43.4	38.7
Days before Resumption of Normal Diet	5.2	8.9
Average Loss of Weight per Patient	2.9	4.4
Days in Bed	1.0	12.7
Days in Hospital	10.3	16.1
Weeks of Convalescence	5.7	10.3

Chart 5.—Composite clinical records and summary of additional data relative to all patients who were up and walking on the first day after major surgery compared with an equal number who remained recumbent for 12.7 days after operations of similar scope; 100 patients in each group.

In total there were 17 postoperative complications among the hundred patients who were out of bed on the first day and 46 among the same number in the unselected control group.

6. *Sutures.*—Accurate reapproximation of tissues is compulsory, if early activity is planned, preferably with nonabsorbable, interrupted sutures except in the peritoneum, which may be closed with a continuous stitch. Additional supporting sutures of silkworm gut or silver wire may be desirable for obese patients and in the presence of infection. Silk was employed most frequently in the cases herewith reported (table 1). Catgut alone was not used sufficiently often to be certain of its integrity without reinforcement by stay sutures of nonabsorbable character. However, proper and accurate coaptation of tissues, meticulous hemostasis, assiduous care in the prevention of infection, and gentle manipulation of tissues are undoubtedly of more importance than the nature of the material with which the wound is sutured.

COMMENT

1. *Physiologic Considerations.* — (*a*) Pulmonary: Elevation of the diaphragm in recumbent position, pooling of tracheobronchial secretions in the finer ramifications of the bronchial tree, the patient's disinclination to cough because of pain, the limitation of maximal respiratory excursions and invariable reduction in vital capacity after laparotomy or herniopiasty [2] all play some role in the etiology of postoperative atelectasis and pneumonia. The volume of tidal air, tension of oxygen in the alveolar spaces, oxygen saturation of arterial blood, and the depth and rate of respiratory movements are increased by exercise. Hence early postoperative walking may reasonably be of definite therapeutic value in the prevention of pulmonary complications. Some authors believe that the incidence of such complications is reduced 75 to 80 per cent by prompt ambulation.[3]

(*b*) Circulatory: The circulation time from the ankle to the carotid sinus is decreased by elevation of the extremity and by active exercise of the leg with the patient in the supine position.[4] The additional specific consequence of walking in the erect posture has not been studied, but the general effects of muscular activity on the venous circulation of the lower extremities are well known. Diminished venous return is considered by many authors to be the most significant single etiologic agent in the pathogenesis of postoperative thrombosis in the deep veins of the leg and is a physio-

TABLE 1.—*Various Materials Used for Sutures*

Material	Activity: Early	Late
Silk	85	72
Silk and silkworm gut	1	2
Silk and silver wire	0	1
Silk and fascia	1	0
Catgut	7	8
Catgut and silkworm gut	1	2
Catgut and silver wire	5	1
Not stated	0	14
Total	100	100

TABLE 2.—*Postoperative Complications Incidental to Early and Late Activity*

Complication	Postoperative Activity: Early	Late
Local		
Disruption of wound	0	0
Subsequent herniation	1	2
Recurrence of hernia	..	2
Infection of wound	1	..
Residual intraperitoneal abscess	..	2
Hematoma in wound	2	1
Silk sinus	..	1
Pulmonary		
Massive atelectasis	..	1
Bronchopneumonia	1	1
Infarct of lung, embolic	..	2
Suspected infarct of lung	..	1
Bronchitis	2	1
Cardiac		
Coronary thrombosis	..	1
Angina pectoris	..	1
Paroxysmal auricular fibrillation	..	1
Vascular		
Ileofemoral thrombophlebitis	1	1
Thrombosis of deep veins of legs	..	1
Suspected thrombosis of veins of legs	1	3
Genitourinary		
Inhibition of bladder		
Requiring 1 catheterization only	6	3
Requiring several catheterizations	2	11
Gastrointestinal		
Dilatation of stomach	..	3
Fecal impaction	..	2
General		
Unexplained fever	..	5
Total	17	46

2. Powers, J. H.: Vital Capacity: Its Significance in Relation to Postoperative Pulmonary Complications, Arch. Surg. **17**: 304-323 (Aug.) 1928.

3. Newburger, Bernhard: Early Postoperative Walking, Surgery **14**: 142-154 (July) 1943.

4. Smith, L. A.; Allen, E. V., and Craig, W. M.: Time Required for Blood to Flow from the Arm and from the Foot of Man to the Carotid Sinuses: I. Effect of Temperature, Exercise, Increased Intramuscular Tension, Elevation of Limbs and Sympathectomy, Arch. Surg. **41**: 1366-1376 (Dec.) 1940.

logic factor which presumably may be directly and favorably influenced by early activity and walking. Methods to decrease venous stasis and the incidence of thrombosis by position and exercises in bed have not been universally successful. Actual walking, however, is said by many authors to minimize the development of thrombosis.[5]

The occurrence of 1 case of ileofemoral thrombophlebitis and 1 of suspected thrombosis in the deep veins of the leg among the ambulatory patients (table 1) indicates that early postoperative walking does not entirely circumvent the formation of thrombi; it may, however, obviate the liberation of emboli of sufficient size to precipitate a fatal postoperative catastrophe. A thrombus of this magnitude does not usually develop in an active venous circulation.

(*c*) Gastrointestinal: Postoperative dysfunction of the gastrointestinal tract is uncommon when early convalescent activity is permitted. Abdominal distention is rare. Enemas, rectal tubes and poultices are seldom necessary. On the fourth or fifth postoperative day a regular diet may be accepted with neither distaste nor discomfort (chart 5).

(*d*) Musculoskeletal: The absence of asthenia has impressed all observers who have advocated early ambulation after surgical operations and after rigid fixation of fractures. Demineralization of bones and atrophy of muscles, so common after prolonged periods of rest in bed, are entirely obviated. The convalescent period of reconditioning before return to normal activity is reduced to approximately one-half its former magnitude (charts 1, 2, 3, 4 and 5).

(*e*) Reparative: The attitude of the majority of surgeons toward the healing of wounds is one of conservatism, based in no small part on the teachings of Billroth, who believed that rest and protection were essential for proper repair of coapted tissues. Contrary to this orthodox opinion, those who have advocated early postoperative walking have observed no deleterious effect as a result thereof, no increase in pain, no greater frequency of disruption or hernia. Some authors claim an even kindlier and more rapid healing when patients are allowed to be up and about during the early postoperative convalescence.[5]

2. *Psychologic Aspects.*—The improvement in morale is striking. From previous experience, or from the tales of relatives or friends, many patients anticipate surgical operations with fear and apprehension. "Gas pains," bed pans, enemas and hypodermics are foreseen with horror. When such a patient learns that he is to get out of bed and walk on the first or second postoperative day, be permitted the freedom of the ward on the third or fourth, and lead an essentially normal life shortly thereafter, his whole attitude toward the operation and his hospital experience undergoes a profound change. The fear of surgery and the discomforts of the convalescence may be largely eliminated by a program of accelerated activity.

3. *Economic Factors.*—Postoperative care is tremendously simplified. Within a few days patients are able to attend to their own requirements and also assist with a few simple duties in the ward. The services of a limited number of graduate nurses are thereby made more readily available for the essential treatment of patients who require professional attention.

5. Newburger, Bernhard: Early Postoperative Walking: The Influence of Exercise on Wound Healing in Rats, Surgery **13**: 692-695 (May) 1943; footnote 3.

Early discharge from the hospital effects an economy for the patient and an efficient utilization of beds by the institution.

Prompt rehabilitation insures a minimal loss of time from work and the early reestablishment of normal activity.

CONCLUSION

Prompt restoration of surgical patients to normal life is an essential feature of convalescent supervision. Early postoperative activity and walking provide manifest modifications in customary convalescent care by which the process of reconditioning may be largely eliminated and early rehabilitation achieved.

The indications for such a program are manifold; no contraindications are apparent in this study of 100 consecutive cases.

THE EVIL SEQUELAE OF COMPLETE BED REST

WILLIAM DOCK, M.D.
LOS ANGELES

It is rarely possible to ascribe to bed rest alone the disorders which become manifest in patients confined to bed during the treatment of disease or injury. Intercurrent illnesses sometimes develop in spite of bed rest, as when myocardial infarction occurs during convalescence from a pelvic or orthopedic operation. In most cases the evil effects of complete bed rest are potentiated by anesthesia, narcotics or other medication or by the results of the original illness. But it must also be recognized that many disturbances of function, such as massive collapse of the lung, attributed to operation, illness, anesthesia or medication have become evident only because the patient was forced to spend hours or days in the dorsal recumbent position.

In any discussion of the effects of complete bed rest it is to be borne in mind that the disorders noted may have been aggravated, or even initiated, by a depression of activity and responsiveness due to psychic trauma, anesthesia or sedation. Even prolonged bed rest is rarely followed by serious physical sequelae when lively young patients are kept in bed without any sedatives, whereas rapid onset of fatal complications most commonly occurs when indolent obese elderly patients are confined to bed after prolonged anesthesia, and with enough pain to justify continued use of sedatives and narcotics.

The effects of hospital life and of bed rest on the psyche are so obvious and have been so clearly described by such novelists as Tolstoi and Balzac that most laymen are well aware of this hazard of therapy. At the present time the effects of complete bed rest on metabolism and on the structure and function of healthy volunteers are being subjected to a careful quantitative study. Bone atrophy,[1] muscular wasting[2] and vasomotor instability are not infrequent sequelae of bed rest, while constipation, cathartic habituation, backache and many other chronic disabilities may appear during bed

From the University of Southern California Department of Medicine.
Read in a symposium on "The Abuse of Rest in the Treatment of Disease" before the Section on Experimental Medicine and Therapeutics at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 15, 1944.

1. Allison, N., and Brooks, B.: Bone Atrophy: A Clinical Study of the Changes in Bone Which Result from Disuse, Arch. Surg. **5**: 499 (Nov.) 1922. Albright, F.; Burnett, C. H.; Cope, O., and Parson, W.: Acute Atrophy of Bone (Osteoporosis) Simulating Hyperparathyroidism, J. Clin. Endocrinol. **1**: 711 (Sept.) 1941.

2. Cuthbertson, D. P.: The Influence of Prolonged Muscular Rest on the Metabolism, Biochem. J. **23**: 1328, 1929. Cuthbertson, D. P.; McGirr, J. L., and Robertson, J. S. M.: Effect of Fracture of Bone on the Metabolism of the Rat, Quart. J. Exper. Physiol. **29**: 13 (March) 1939.

rest and persist for years or decades. The onset of obstructive uropathy or of pulmonary edema on confining elderly patients to bed are phenomena which interns in large city hospitals observe only too often. Nothing more will be said here of these serious complications or of the classic lesion due to bed rest—pressure necrosis or bed sore.

Other vertebrates, and notably the birds, share man's bipedal erect posture, but so far as I know no other animal lies on its back when ill. Indeed, it is almost impossible to conduct experimental studies of the effects of the dorsal recumbent posture, maintained for days or weeks, in any species but man. Normal sleep is associated with frequent changes from supine to prone or lateral positions, and this restless type of activity is usual also during the sleep of many patients confined to bed but not in shock, pain or prostration.

During his waking hours the patient treated by complete bed rest lies on his back, and he sleeps, or tries to sleep, in that position after operations or when kept in the orthopneic or Fowler posture. Since this is not a restful way to sleep, sedatives are given to many patients who are required to live in this fashion. Thus the stage is set for many hours of inert recumbency, with shallow breathing and diminished muscle tone. The serious evil sequelae of complete bed rest may appear in a few days; a few phlegmatic or profoundly depressed patients may exhibit these disorders without receiving any narcotic or sedative.

The total metabolism and the muscle tone are obviously low in the type of patient just described. This decreases the volume of flow in all the vessels of the body, but if the patient lies flat at all times the venous pressure is low and the caliber of the veins small. In the abdomen, pelvis and legs the veins then are much smaller than when sitting up, as one can readily see if the veins of the back of the hand are observed when recumbent, with the hands at the level of the great trochanter, and when sitting up with the hands resting on the thighs. With the veins at this small caliber the velocity of blood flow will be high in spite of the decrease in volume of flow, but, when the shoulders are propped up the veins of the pelvis and legs are dilated and the velocity of flow correspondingly reduced, possibly to one-tenth that when the veins are in the same plane as the heart. Frykholm [3] felt that collapsed veins might have endothelial damage, predisposing to later thrombosis, but the fact is that the veins on the anterior aspect of the legs, which obviously are under least venous pressure, almost never become thrombosed during bed rest. Veins compressed and empty, due to pressure of the leg against the bed, may easily suffer endothelial damage and begin to thrombose while still nearly empty. Only when sitting or standing are these veins constantly dilated to their full caliber, but during paroxysms of coughing, or when bearing down to facilitate expulsion of flatus, feces or urine, transient maximal venous dilatation may occur even when one is lying perfectly flat. The formation of large clots propagated far along the system is made possible by the prolonged absence of sighing respiration, cough or bearing down and by the constant elevation of the heart above the pelvis. Dislodgment of clots, with formation of emboli, is effected when there is a sudden rise of venous pressure. As the wave of pressure and venous distention sweeps outward along the venous system, loosely adherent clots, formed in collapsed or partly dilated veins, are stripped away from the wall. If episodes of venous dilatation are frequent, propagation of clots is almost impossible, as the thrombi are dislodged from the minute vessels in which clot formation begins. Such small thrombi are well tolerated by the lungs, and most of them probably dissolve before organization begins. Patients who get up several times a day and those with severe cough, with acidosis, uremia, anemia or impaired blood coagulation therefore are much less subject to serious vascular accidents during bed rest, either because clots form and grow less readily or because they are dislodged before becoming of significant size. The greatest hazard is in those who are propped up slightly for eight to fourteen hours a day, as this favors clotting in partially distended veins.

It is now believed that phlebothrombosis rarely begins in the large veins but in the venules of the muscles and subcutis or in the pelvic venous plexuses where complete stasis is possible.[4] Thrombosis in the feet, calves and thighs begins in the dependent parts, where prolonged pressure and ischemia cause tissue damage.[5] Such lesions may be thought of as the internal equivalent of bed sores, but unfortunately they are far more frequent. Among middle aged and elderly patients, dying after days or weeks of bed rest, thrombosis in veins of the dorsal part of the legs and feet were demonstrable in one fourth to one half of the cases in large series studied in Germany, in Sweden and in Oregon.[6] Fatal pulmonary emboli were present in about 4 per cent of the cases with thrombi in the legs, and nonfatal emboli in about 20 per cent more.[7]

Consideration of the effect of bed rest on the systemic veins ends with the embolization of the pulmonary arterial system, but discussion of the results of embolization calls for a review of the effect of the supine posture on the lungs. The occurrence of acute massive collapse, in postoperative cases especially, is well recognized and much is known of the mechanism and prevention of this type of disorder.[8] The pathologist has known for years that patients dying after only a day or two in bed may have airless patches scattered through the dorsal and caudal parts of the lungs. In the lungs, as in the skin, postmortem lividity due to settling of blood makes the dorsal parts of the lungs very bloody, so the pathologist can tell little or nothing of the passive hyperemia present in these regions during life. But physical signs and roentgen studies do indicate the occurrence of hyperemia and edema in the dependent parts of the lungs, especially on the right side, in many patients who spend most of their time in the dorsal and right lateral decubital positions. Such hyperemia and edema probably predisposes to collapse of the local regions. While it is not likely that collapse occurs post mortem, it must develop rather rapidly during the agonal state as respiration fails and accumulation of fluid in large bronchi interferes with aeration. Patients with air hunger and deep respiration up to the final hour show notably less collapse post mortem than do those with normal blood levels of hemoglobin and base, and radiologists are familiar with the clear peripheral lung fields and hilar hyperemia in cases of

3. Frykholm, R.: Pathogenesis and Mechanical Prophylaxis of Venous Thrombosis, Surg., Gynec. & Obst. **71:** 307 (Sept.) 1940.

4. Neumann, R.: Ursprungszentren und Entwicklungsformen der Bein-Thrombosen, Virchows Arch. f. path. Anat. **301:** 708, 1938. Frykholm,[3] Rössle.[6] Hunter, Sneeden, Robertson and Snyder.[7]

5. Voegt, H.: Veränderungen der Wadenmuskulatur bei Venenthrombose und langem Krankenlager, Virchows Arch. f. path. Anat. **300:** 190, 1937.

6. Rössle, R.: Ueber die Bedeutung und die Entstehung der Wadenvenenthrombosen, Virchows Arch. f. path. Anat. **300:** 180, 1937. Frykholm,[3] Hunter, Sneeden, Robertson and Snyder.[7]

7. Hunter, W. C.; Sneeden, V. D.; Robertson, T. D., and Snyder, G. A. C.: Thrombosis of the Deep Veins of the Leg, Arch. Int. Med. **68:** 1 (July) 1941.

8. Corylos, P. N., and Birnbaum, G. L.: Circulation in Compressed, Atelectatic and Pneumonic Lung, Arch. Surg. **19:** 1346 (Dec., pt. 2) 1929.

combined heart failure and uremia.[9] This so-called "pulmonary azotemia" actually should be called "pulmonary hyperemia with acidosis," for it is the acidosis and air hunger which prevent the collapse of many alveoli so common in bedfast patients with dorsal passive hyperemia or with the pulmonary hyperemia of heart failure. It is in these collapsed parts that terminal, or hypostatic, pneumonia develops, and here is where necrosis begins whenever pulmonary infarction follows pulmonary embolism. In the aerated lung, pulmonary embolism raises the oxygen tension by diminishing the inflow of reduced blood from the right ventricle, and even if the bronchus is closed as well as the artery the tidal movement of oxygenated blood in the pulmonary vein maintains the viability of the tissue as long as the pulmonary veins dilate and collapse during the cardiac cycle. In dependent parts of the lungs the veins are fully distended throughout the cardiac cycle and tidal flow ceases.

It was formerly taught that infarcts occur only in patients with passive hyperemia of the lungs, but now it is known that they follow pulmonary embolism in 60 per cent of surgical and medical cases without heart failure and in 90 per cent of the cardiac.[10] Here again the combination of dorsal decubitus with sedatives which depress respiration serves to pave the way for trouble, and young men previously in excellent health may have pulmonary infarction within a week of an otherwise uncomplicated laparotomy or herniorrhaphy if they have been kept "comfortable and quiet" by skilful nursing and constant medication. In not a few cases the infarct develops, not at the time of embolization, but some days later when collapse happens to occur.[11]

A discussion of the hazards of bed rest would be incomplete without emphasizing the tremendous strain put on the heart and circulation by a maneuver which patients in bed frequently perform and against which many are never warned. Whenever one takes a deep breath, closes the glottis and tightens the thoracic and abdominal muscles (Valsalva's experiment, "bearing down") there follow a series of extreme fluctuations in thoracic pressure, cardiac output, blood pressure and vagal and vasomotor tone. After myocardial infarction sudden death is far more likely to occur when the patient performs this effort than from any other cause, and it is a common incitant of pulmonary embolism. This may occur on the bed pan or even when passing flatus or trying to push oneself higher on the pillows. Patients with difficulty in urination or defecation probably undergo less risk if warned against this procedure and allowed to get out of bed to use a commode than when left to struggle in a supine position. To put a man at complete rest for heart disease without making sure that the Valsalva experiment is never carried out, at any time, is about as illogical as forbidding a patient to do desk work but letting him run upstairs. Every physician should be acutely aware of the fact that simply ordering "complete bed rest" does not protect the patient from severe periodic stress on the heart and circulation, while it does expose him to definite danger.

At another occasion it might be profitable to review the therapeutic measures necessary to minimize the hazards of complete bed rest. Obviously these will include omission or rigid restriction of narcotics and sedatives, encouragement of deep breathing exercises, frequent changes of posture and acceleration of venous flow in the legs by elevating the foot of the bed and not the patient's thorax, or by exercise or reactive hyperemia from brief arterial compression. There is no doubt that precautions based on an understanding of phlebothrombosis,[12] pulmonary embolism and infarction[13] will greatly reduce the evil sequelae of complete bed rest in those cases in which it seems necessary in spite of its hazards. But this still leaves the inevitable residue of tragic cases in which bed rest is the chief agent of disaster. The physician must always consider complete bed rest as a highly unphysiologic and definitely hazardous form of therapy, to be ordered only for specific indications and discontinued as early as possible.

9. Lelong, M., and Bernard, J.: Sur certains aspects radiographiques de l'oedème pulmonaire chez les cardio-rénaux, Bull. et mém. Soc. méd. d. hôp. de Paris **53**: 177 (Feb. 15) 1937. Nessa, C. B., and Rigler, L. G.: The Roentgenological Manifestations of Pulmonary Edema, Radiology **37**: 35 (July) 1941.

10. White, P. D.: Pulmonary Embolism and Heart Disease, Am. J. M. Sc. **200**: 577 (Nov.) 1940.

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THE ABUSE OF REST IN BED IN ORTHOPEDIC SURGERY

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Among orthopedic surgeons the importance of rest as a therapeutic measure has been emphasized since the beginning of this specialty. It is generally recognized that Hugh Owen Thomas was one of the forerunners of orthopedic surgery. In his book "Menders of the Maimed" Sir Arthur Keith said "It was the custom of John Hunter to prescribe 'Rest' as a routine measure in the treatment of disablements of the motor system of the human body. After him came John Hilton, who regarded rest as the most powerful aid which the surgeon could bring to the aid of disordered tissues. Hilton elaborated the means of securing rest into a system; but the man whose principles and practice we are to describe here made rest his creed and ritual. Hugh Owen Thomas believed that an overdose of rest was impossible. To use the expression which he never tired of repeating—Rest must be 'enforced, uninterrupted and prolonged.'"

Thus one may see that the creed prescribed for orthopedic surgeons of a generation or more ago called for rest in considerable quantities. This may have been and probably was carried to an extreme beyond reason. However, one must consider that many of the patients for whom this treatment was employed had tuberculous infection of bone, and while other means of eradicating tuberculosis have brought about a striking decrease in the incidence of the disease, particularly in the number of cases of tuberculosis of bones and joints,

12. Ochsner, A., and DeBakey, M.: Thrombophlebitis, J. A. M. A. **114**: 117 (Jan. 13) 1940.

13. Pilcher, Robin: Role of Obstruction in Pulmonary Embolism, Lancet **1**: 1257 (June 3) 1939. Belt, T. H.: Autopsy Incidence of Pulmonary Embolism, ibid. **1**: 1259 (June 3) 1939. de Takats, G., and Jesser, J. H.: Pulmonary Embolism, J. A. M. A. **114**: 1415 (April 13) 1940. de Takats, G.; Fenn, G. K., and Jenkinson, E. L.: Reflex Pulmonary Atelectasis, ibid. **120**: 686 (Oct. 31) 1941. Barker, N. W.; Nygaard, K. K.; Walters, W., and Priestley, J. T.: Statistical Study of Pulmonary Embolism: Postoperative Venous Thrombosis and Incidence in Various Types of Operations, Proc. Staff Meet., Mayo Clin. **15**: 769 (Dec. 4) 1940; Predisposing Factors, ibid. **16**: 1 (Jan. 2) 1941; Location of Thrombosis: Relation of Thrombosis and Embolism, ibid. **16**: 33 (Jan. 15) 1941; Time of Occurrence in Postoperative Period, ibid. **16**: 17 (Jan. 8) 1941. Westdahl, P. R.: Pulmonary Embolism, West. J. Surg. **49**: 77 (Feb.) 1941. Maitland, H. S.: Spontaneous Thrombosis of Veins of Lower Extremity and Pelvis and Fatal Pulmonary Embolism Following Trauma and Surgical Operations, S. Clin. North America **21**: 383 (April) 1941. Burrell, R. O.: Prevention of Pulmonary Embolism, Manitoba M. Rev. **22**: 161 (Aug.) 1942. Schmidt, H. W.; Mousel, L. H., and Harrington, S. W.: Postoperative Atelectasis: Clinical Aspects and Review of Cases, J. A. M. A. **120**: 895 (Nov. 21) 1942.

From the Section on Orthopedic Surgery, Mayo Clinic.

Read in a symposium on "The Abuse of Rest in the Treatment of Disease" before the Section on Experimental Medicine and Therapeutics at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 15, 1944.

rest still remains the best known means of combating that disease in the human body. For many years the only form of treatment consisted of years of rest in bed in the patient's home or in a hospital. Splinting of joints, supporting dietary regimens, heliotherapy and other things were supposed to add to the efficacy of the treatment, but the main feature was rest.

For the past thirty years the fact that more perfect rest to diseased joints could be brought about by internal fixation of the spinal column and major joints by means of operative fixation with bone grafts or by a fusion operation has come to be recognized. Now tuberculous joints, when recognized, usually are treated in this manner and a decrease in the period of rest in bed and hospitalization, and for the most part improvement in the results has been effected. Severe kyphosis is rarely seen, and the extreme destruction of joints with pathologic dislocation is not often seen. In addition, the bad effects of long rest in bed have been reduced.

Elsewhere in this symposium the deleterious effects of long rest in bed will be considered. From the standpoint of the orthopedic surgeon, one effect deserves emphasis perhaps beyond that which it will be given by other speakers. This effect is atrophy. Atrophy of muscles, articular structures, bone and skin results from prolonged rest and must be regarded as a pathologic condition. The actual pathologic physiology of this condition is not well understood. Certainly there are other factors than simple disuse that contribute much to certain types of atrophy, but the effect of disuse alone is sufficient to lead to a good deal of disability. If one opens a thigh to remove fascia for surgical procedures one will be struck by the smooth surfaces of contact between the fascia and underlying muscle. These surfaces fairly glisten and are not adherent; obviously, smooth, gliding movements between the muscle and fascia are not impeded. On the other hand, when one opens a thigh that has been at rest either in a cast or in a splint or as a result of rest in bed one often finds that the fascial surface as well as the surface of the underlying muscle is dull and does not glide; oftentimes many small adhesions have formed between the muscle and the fascia. This seems mainly the result of disuse and inactivity or, in other words, an alteration from the normal physiology of the involved region. I often have thought that, if such changes take place between all muscles and their fascial coverings or gliding envelops, they must have a considerable effect in producing limitation of function in the skeletal system. To a lesser extent and to a less pronounced degree the same effects, as a rule, may be seen in joints which are not used and in cases in which rest in bed is employed; however, bony atrophy may become symptomatic and even progress to the point where pathologic fractures may take place. A similar condition may take place in the skin, and the dangers of decubitus ulcers in bedridden patients are well known. Much of this atrophy can be avoided by systematic massage and exercises in cases in which, for some reason or another, it is necessary to remain in bed for a long time. Too often, however, such measures are overlooked, forgotten or neglected to the certain detriment of the patient.

One of the most common and most severe effects of rest in bed is embolism; however, this does not occur frequently in orthopedic cases. Most orthopedic patients are turned frequently enough when in bed to prevent this catastrophe, and the surgeon who neglects to see that his patients are turned over at least two or three times daily may find this complication arising more often than it should.

The main group of cases in which orthopedic surgeons have to employ rest in bed as a part of the treatment are cases of disease or injury of the spinal column, pelvis, hip or femur. There is scarcely any form of disease or injury of these parts in which efforts to reduce the period of rest in bed have not produced good results. The period of rest in bed in such cases, therefore, has been greatly reduced.

FRACTURES OF THE FEMUR

Fractures of the Neck of the Femur.—One of the outstanding examples of such reduction is in the treatment of fractures of the neck of the femur as well as intertrochanteric fractures of the femur. The method of treatment which formerly was used universally included putting the patients in bed and employing Buck's extension or applying a weight to the injured leg. Whitman's [1] method of reduction and application of a cast reduced the period of enforced rest in bed to some extent and did much to improve the results of treatment of fractures of the neck of the femur.

In 1931 Smith-Petersen [2] introduced the method of fixation of fractures of the neck of the femur by means of a three flanged nail. This method soon came into widespread use, and although many types of instruments for internal fixation have been devised and many methods of introducing the fixatives have been developed, the principle of internal fixation of such fractures has undoubtedly come to stay and with it a definite shortening of the period of rest in bed. Not all surgeons are in agreement as to the length of time necessary for convalescence in cases of this type of fracture. Soon after the method was introduced, many surgeons advocated that the patients be gotten up immediately after the operation and that ambulatory treatment be commenced. It is my impression from my own experience and from the observation of other surgeons that most surgeons prefer to keep the patient in bed for three to five weeks after such fixation. This is, of course, a great reduction in the period of rest in bed formerly employed, and it has produced great improvement in the results obtained, from the standpoint both of the percentage of united fractures and of the great decrease in the number of complications arising during convalescence.

The quality of results obtained in the treatment of fractures of the intracapsular type has led to a widespread effort on the part of surgeons to improve the results and reduce the complications in cases of intertrochanteric fractures of the femur. Although this type of fracture seldom leads to nonunion and, for this reason, does not cause permanent crippling in as many cases as does intracapsular fracture, the incidence of complications, often fatal and largely due to the prolonged rest in bed incidental to the convalescence, is equally high. Although it cannot be said that the various methods of internal fixation of this type of fracture have as yet been as widely accepted or as well perfected as have those employed in cases of intracapsular fracture, it is my opinion that the general principle of early internal fixation of intertrochanteric fractures must be accepted and is here to stay. With it will come a shortening of the period of rest in bed and a consequent improvement in the general well-being of the patient.

1. Whitman, Royal: A New Method of Treatment for Fracture of the Neck of the Femur, Together with Remarks on Coxa Vara, Ann. Surg. **36**: 746-761, 1902; The Abduction Treatment of Fracture of the Neck of the Femur: A Comparative Analysis from the Standpoint of Technical Efficiency, Surg., Gynec. & Obst. **27**: 578-585 (Dec.) 1918.

2. Smith-Petersen, M. N.; Cave, E. F., and Vangorder, G. W.: Intracapsular Fractures of the Neck of the Femur: Treatment by Internal Fixation, Arch. Surg. **23**: 715-759 (Nov.) 1931.

Other Fractures of the Femur.—Other fractures of the femur often demand a period of rest in bed. Depending on the type of fracture and the type of treatment used, this period may last for several days to many months. Although traction methods are of value in many cases, it must be recognized that they necessarily prolong the period of rest in bed. In choosing a method of treatment, this factor must be taken into account. Indeed, in many instances open reduction for internal fixation and the subsequent application of a spica cast in order that the patient may be turned and even gotten up so as to avoid the deleterious effects of continued rest in bed in a supine position, such as is necessary when most traction methods are employed, will tend to cause less strain on the general condition of the patient.

In late years, many efforts have been made by various methods of pin fixation to get patients with a fractured femur ambulatory at an earlier date. Such methods as those of Roger Anderson,[3] Stader and Haynes all point toward this.[4]

Although I do not want it to be construed that I advocate these methods of treatment of fracture of the femur, I do wish to emphasize that many surgeons are attempting, by using these methods, to have their patients walk early. All realize the dangers of long periods of rest in bed, and the effort of all forward looking surgeons is to shorten this period. Any method that has as its main advantage earlier ambulatory treatment will have a ready and wider hearing, and one must expect constant improvement of methods to this end.

LESIONS OF THE SPINAL COLUMN

An equally important group of lesions to be considered from this standpoint are fractures of the spinal column. Although patients with fractures of vertebrae accompanied by paraplegia are, of necessity, required to remain bedfast for a long time, it must be recognized that in this group of cases complications arise frequently, are difficult to control and often are fatal. Many of these complications are directly due to enforced rest in bed. Some effective means of treating this group of patients so that they may be allowed out of bed earlier would be most welcome. For the treatment of simple compression fractures and fractures without paraplegia there are available methods of reduction and control which will greatly shorten the period of rest in bed, which is desirable. Rest in bed for four to six weeks is adequate in practically all cases, provided adequate fixation of the spinal column with plaster is employed after reduction by means of a hyperextension frame or by hyperextension manipulation under anesthesia. For elderly persons with a compression fracture of moderate severity it has been our custom at the Mayo Clinic for several years to fit them with an adequate spinal support and get them up within a few days in order to avoid the almost inevitable complications that arise because of prolonged and continuous rest in bed.

The period of convalescence has been shortened after operations for fusion of the spinal column, particularly after fusion of the lumbosacral vertebrae for such conditions as spondylolisthesis, traumatic lumbosacral arthritis, spondylolysis and after fusion that is done at the same time as an operation for protrusion of an intervertebral disk. Formerly it was not uncommon for patients to be kept in bed, and sometimes in casts, for twelve weeks after such an operation. Now, many of our patients are allowed to be up and about for a short period daily at the end of three weeks after operation. We often permit these patients to turn themselves from side to side and even to turn on the face three days after the operation. No ill results have been noticed from this change of procedure. Indeed, it seems that the patients have an easier convalescence and are able to resume activity with greater ease and comfort than they did formerly, when the period of rest in bed was two to four times as long as it is at present and when the rules as to the patients' turning themselves in bed were more strict.

ARTHRITIS

It is, of course, necessary to use rest in bed in the treatment of arthritis; but I have often thought that the day an arthritic patient gives up and goes to bed is the day he becomes a total cripple. I have been astonished at times to see patients obviously suffering from severe and disabling arthritis who, by sheer force of circumstances, have been prevented from giving up and going to bed. Such patients usually come through their ordeal with much better joints than do those who have been put to bed, even though the rest in bed may be accompanied by the best available treatment.

COMMENT

I have tried to point out that orthopedic surgeons, realizing the detrimental effects of complete rest in bed, have over the years succeeded in shortening the periods of such confinement in their prescribed treatment for various conditions. Efforts to improve treatment toward this goal continue, and one will see more advances along this line in the future.

3. Anderson, Roger: Ambulatory Method of Treating Femoral Shaft Fractures, Utilizing Fracture Table for Reduction, Am. J. Surg. **39**: 538-551 (March) 1938.

4. Shaar, C. M., and Kreuz, F. P., Jr.: Treatment of Fractures and Bone and Joint Surgery with the Stader Reduction and Fixation Splint, S. Clin. North America **22**: 1537-1583 (Dec.) 1942.

THE ABUSE OF REST IN PSYCHIATRY

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A little over a hundred years ago a man was born in Philadelphia who became preeminent in three fields. In 1881 he was described by Sir James Paget as "one of the most distinguished medical men in your country or in any country." In addition to conducting one of the largest private practices in America, he was the author of a book of poetry, one of children's stories, numerous novels, a treatise on neurologic injuries and 250 articles on pharmacology, physiology, toxicology and psychotherapy. He received honorary degrees from Bologna, Edinburgh, Toronto, Harvard, Princeton and Jefferson. It is significant that a man of such prodigious labors and accomplishments should have made famous a program of treatment by rest!

Weir Mitchell described his "rest cure" in a number of books, the titles of which indicate his philosophy: Wear and Tear, Hints for the Overworked, Fat and Blood. His idea was that nervous illnesses were the result of physical exhaustion, which he combated by complete bed rest, complete isolation, no visitors, no letters, no reading, no writing; the constant attendance of a nurse, some massage and electricity and, withal, high caloric feeding.

From the Menninger Clinic.
Read in a symposium on "The Abuse of Rest in the Treatment of Disease" before the Section on Experimental Medicine and Therapeutics at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 15, 1944.

Mitchell's prestige, influence and persuasiveness were such that his "rest cure" for the treatment of neuroses influenced American medicine for nearly fifty years. The fact that persons with nonorganic illnesses who complained of "nervousness" seem to be wasting energy by unnecessary tensions, anxieties and fruitless exertions and that they suffer, subjectively at least, from a high degree of fatigability could not but impress physicians who, because they had been reared and trained in a mechanistic physiologic philosophy of human life, saw these cases without benefit of psychologic insight. The fatigue theory of the neuroses which so impressed Weir Mitchell thus continued to impress nonpsychologically minded physicians, who welcomed a plausible physiologic expansion of these baffling cases. Diagnoses of nervous exhaustion, nervous fatigue, fatigue neuroses, nervous breakdown from overwork, nervous weakness, neurasthenia and so on continued to fill the records of hospitals, clinics and private practitioners. Treatment based on these diagnoses and Weir Mitchell's example were developed, exploited and popularized—modified rest cures, relaxation treatment, vacation treatment and what I have called "trip treatment"—the sending of patients away on visits to California, Florida and Europe, or on fishing trips, hunting expeditions and the like.

Modern psychiatry regards this conception of neurosis and these forms of treatment for neuroses as entirely false in theory and unsound in practice. To relate ourselves again to the title of this symposium I will put it this way: the abuse of rest as a treatment in psychiatric conditions represents a neglect or misunderstanding of the real pathologic condition of the neurotic patient under the guise of a treatment which is not only futile and expensive but very often definitely harmful.

In the brief limits of time available it would be difficult to answer all the questions to which this statement will give rise. In a very condensed form I shall try to outline the modern theory of the neuroses and of the treatments considered appropriate for them in contrast to those which justify the practice of prescribing excessive rest and indicate, in closing, some of the ways in which rest can be used without abuse.

There is no question but that nervous patients show evidences of fatigue and easy fatigability; this fatigue is a symptom of the neurosis. Overstudy, overapplication, overexertion and all other excess expenditures of energy do not cause psychiatric syndromes; they are often the expression of psychiatric illness. The cure of the psychiatric illness—the neurosis, the nervousness—is the removal of that which impels the individual to make such depletions of his own strength, to waste so much of his energy or to require so much of it to hold himself in check against explosions or collapse. The modern conception of a psychiatric illness is a dynamic one based on a concept of cooperative and interactive anatomy, physiology and psychology. The neuroses and psychoses and other evidence of maladjustment on the part of a patient are a result of misdirected energy rather than the lack of sufficient energy. An automobile the engine of which has become overheated as the result of being driven with the brakes set cannot be cured by resting. As soon as the car's proper function, that of traveling along the road, is resumed (with the brake still set) the same overheating will result. The question is Why are the brakes set and how does one release them?

The problem of treatment of a psychiatric illness thus goes beyond merely arresting any attempt at adjustment by physical exertion. It aims at the redirection of the wasted energy, the removal of interfering inhibitions and the setting up of requisite inhibitions. Human beings are impelled by instinctual forces to attempt certain modifying relationships with respect to their environment. From earliest infancy they want "to do something." As they grow older and the aimlessness of infantile manipulation of the environment becomes an organized pattern, this something which they do to the environment turns out to be a modification of it in either a constructive or a destructive direction. We perform creative activity and destructive activity—nothing else. Both forms of activity seem to be related to certain instinctual drives, and a certain kind and amount of destructiveness and a certain amount of creativeness appear in the activities of every human being. As long as an adequate amount of both is possible for an individual, he does not develop a neurosis or a psychosis.

For various reasons—a brain tumor, a hemiplegia, an infection with tuberculosis, a reaction of grief to the death of a daughter, a reaction of fear to the treatment of an employer, a reaction of hate to the infidelity of a husband, an ineradicable memory of overwhelming defeat and inadequacy experienced in childhood—for these and many other reasons, the ability to direct energy in a proper pattern of destructiveness and creativeness fails to develop or to be maintained. The resulting incoordinate, awkward attempts to maintain an adjustment is expensive of energy. The patient carries on with his assigned tasks only under the greatest difficulty, with increasing inefficiency, pain and internal and external dissatisfaction. Perhaps he continues to operate at 40 per cent efficiency plus much complaining, worrying, lamenting and despairing, plus many "patent medicines," osteopathic treatments, periods of absenteeism, week end drunks, acerbities with wife and children, quarrels with fellow employees, foremen and assistants. If his efficiency declines even further, let us say to 20 per cent, he may come to a psychiatrist. The brakes are well set, the heat is enormous, the productivity is minimum, the distress is great.

The absurdity and futility of prescribing rest for such a patient must be apparent. The problem is rather to discover what prodigious internal consumption and blockade of energy has occurred and how it can be directed again to fruitful employment. The technic in doing this is beyond the scope of the paper; it would entail a review of the entire program of psychiatric examination and treatment.

Pari passu with the development of the rest cure there developed in the field of medicine a program of work cure. This concept held that such individuals needed only to be driven to more strenuous efforts, a procedure comparable to driving an overheated brake-set autmobile harder and faster. Obviously, this is an even more absurd philosophy than that of the rest cure. It appealed particularly to hardboiled industrialists and misguided Army officers whose conception of neurotic illness is that its victims are lazy liars or yellow dogs, feigning disability to avoid duty.

At first glance, the behavior of the neurotic or psychotic patient would seem to lend support to these emotionally colored judgments of the exasperated practical man of affairs. The modern psychiatric hospital provides abundant opportunities for enlisting the interests of patients [1] and yet despite the efforts of the medical director, the medical staff, the nursing staff and the therapists—despite schedules and regulations and exhortations—many patients manage to evade with an uncanny skill every available opportunity for exercise, constructive craft work, amusement, diversion, recreation and all the other outlets so carefully planned and devised for them. The temptation is to react to this emotionally, forgetting that this is the primary problem of psychiatry. What malignant energy lock has occurred within them that prevents it? What we find almost regularly in psychiatric patients is that they cannot work, they cannot play and they cannot rest. They have to be taught to do all three of these things. Fortunately, in most cases it proves possible to grade the assignments so that patients may be taught to play and taught to work and thus taught to divert available energy toward the construction of patterns of creativeness and destructiveness which can be reemployed usefully in the outside world when the patient has made sufficient progress. Meanwhile of course other types of procedure must be instigated which make more energy available for the development of such patterns.

To teach such individuals how to work and how to play is to teach them how really to rest. This is the function of occupational therapy, recreational therapy, educational therapy and psychotherapy as they are employed in the modern psychiatric hospital.[2] They seek to make it possible for the patient to find an outlet for his instinctual urges in work and play properly guided, properly taught, properly selected for his special needs, interests and capacities, and properly graded and expanded. All this is in a contrary direction to that of the old plan of enforced rest whereby the patient through moral, physical or chemical restraint was obliged to surrender to idleness and passivity. Both types of treatment were not only ineffective; they were actually deleterious. The reason for this is not far to seek. Patients deprived of physiologic, mechanical and psychologic devices for turning their aggressive energy into batting a ball, digging a trench or making a puppet turn these destructive tendencies in on themselves.[3] The man who commits suicide, who kills himself, is often thought of as the paradigm of psychiatric morbidity. He turns all of his aggressive energy on himself and commits a murder with himself as the object. It is quite obvious, of course, that many self-destructive persons do not go as far as murdering the object; they only berate it, abuse it, debauch it, humiliate it, hamstring it, intoxicate it. By it, of course I mean the self; this is the way many people treat themselves. In psychiatry we describe this abuse and mistreatment of the self as the turning inward of aggressive tendencies. The object of psychiatric treatment for such individuals is to turn these aggressive impulses outward, away from the self. Failure to do so results in a virtual suicide, not by placing a gun to the temple or even by pouring gallons of whisky into the central nervous system, but by the accumulation of hostile feelings associated with self-destructive energy that accomplish the same morbid result. We know that physical exertion, the directed use of the muscles, tends to combat this, and that enforced rest tends to favor it.

Having thus demonstrated as well as I can in the short time allotted to me that rest can be a very dangerous remedy and do a great deal of harm, I should like to end my contribution to this symposium by taking the paradoxical position that rest may also do a very definite amount of good. If one remembers that the psychiatrically disturbed patient who cannot work or play efficiently usually cannot rest adequately, one realizes that definite steps have to be taken to improve this capacity also. It was in that direction that hydrotherapy, prolonged immersion tub baths, wet sheet packs and the like were originally developed, and these are still much employed. Chemical sedatives have improved vastly since the day in which chief reliance had to be put on bromides and opiates. It is possible now to produce sleep in patients whose disturbed emotional conflicts and prevailing fears prevent them from daring to sink into repose without the use of drugs having no deterrent side effects. Some sedatives have the peculiar ability, when administered rapidly, so to modify consciousness and the psychologic architecture as to permit the emergence of what might be described as the indigestible toxic material of the mind. This has been a feature of recent reports from the war theater made by Grinker and Spiegel,[4] Murray [5] and others. In some instances exposure to prodigious stress, both physical and mental, has so depleted the energy reserves of combat troops, airplane pilots and shipwrecked merchant seamen that psychiatric syndromes characterized by anxiety, fears, aggressiveness, erratic behavior and other symptoms have emerged. In these conditions prompt and complete rest has proved of enormous benefit, as indicated by the reports of Commander Daniel Blain [6] of the War Shipping Administration, Public Health Service Clinics, and his associates.[7] A few nights of sound, protected sleep under quiet, pleasant surroundings with good food and manifested friendliness are often sufficient to restore these individuals to active duty within one to three weeks. Even in these cases, important as is the element of rest, the importance of the psychologic factors of safety, sympathy and admiration are probably equally great. Companionship and planned activities are prescribed as soon as the men are up. It should certainly be borne in mind that these cases represent a war syndrome and are not comparable to any peacetime pictures. There is a vast difference between the man who has worked at full capacity for thirty-six hours without stopping and is then thrown into cold oily waters by a submarine attack and fights for his life in and out of a lifeboat for the next twenty-four hours—there is a vast difference between his need for rest and the need for rest of the average maladjusted, neurotic or

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2. Menninger, K.: Psychoanalytic Psychiatry: Theory and Practice, Bull. Menninger Clin. **4**: 105-123 (July) 1940.

3. Menninger, K.: Man Against Himself, New York, Harcourt, Brace & Co., Inc., 1938.

4. Grinker, R. R., and Spiegel, J. P.: War Neuroses in North Africa, prepared and distributed for the Air Surgeon, Army Air Forces, New York, Josiah Macy Jr. Foundation, 1943.

5. Murray, J. M.: Psychiatry in the Army Air Forces, Am. J. Psychiat. **100**: 21-24 (July) 1943.

6. Blain, Daniel: Personal and Morale Factors in Etiology and Prevention of Traumatic War Neurosis in Merchant Seamen, Am. J. Psychiat. **100**: 131-135 (July) 1943.

7. Kubie, L. S.: Manual of Emergency Treatment for Acute War Neuroses, War Med. **4**: 582-598 (Dec.) 1943. Potter, H. W.: Physical and Psychologic Aspects of Environment Essential to Treatment of Traumatic Neuroses (Convalescent or Rest Homes), Am. J. Psychiat. **100**: 120-123 (July) 1943.

psychotic civilian, whose illness is none the less severe but whose physical energy and physiologic defenses have had no such sudden strain put on them.

CONCLUSION

The concept of rest as a form of treatment in psychiatry arose in an era characterized by the total neglect of the consideration of psychologic factors in the study of human beings. As the mechanistic conception of personality has given way to the dynamic organismic conception, the fallacy of curing psychologic symptoms by merely decreasing muscular activity has become apparent. In the sense of physical inactivity, rest has ceased to be of any importance in psychiatric phenomena. Indeed, the tendency is in precisely the other direction; namely, to utilize rather than to blockade further the available energy of the neurotic or psychotic patient. Such a point of view extends beyond a treatment of conditions formerly described as neuroses and psychoses, however; in arterial hypertension, for example, where there is a vascular response to the anxiety associated with emotional conflict, the former prescription of exercise and work seems to have been a step in precisely the wrong direction. I am confident that the death of some hypertensive patients has been hastened by physicians who removed from them the only available or acceptable form of aggression to which they had had access. When I suggested this a few years ago,[8] I received numerous letters from internists confirming this opinion on the basis of their own clinical experience. How widely this may apply to other forms of what we formerly called physical illness and which we now, with equal verbal error, sometimes call psychosomatic conditions has been indicated in part by the presentations in this symposium.

The net philosophical import is that successful medicine must envisage the personality as a physiochemopsychologic unit susceptible of being interpreted and treated from the physical standpoint, the chemical standpoint and the psychologic standpoint, assuming a working knowledge of the instinctual motivations that impel the adjustment patterns of human life.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. HARRISON, EASTMAN, POWERS, DOCK, GHORMLEY AND MENNINGER

DR. J. ROSS VEAL, Washington, D. C.: Thrombosis of the deep veins of the leg and foot is a common complication in patients who are forced to bed. The more sick the patient, the older the patient, the more sedation we use and the more absolute the rest, the more likely is thrombosis. If we look for this condition, we shall be able to find it. Once we find it, we can do something about it and prevent fatal pulmonary embolism. The veins involved are usually the deep tibial, the superficial veins of the leg and deep veins of the feet. If every doctor who has patients confined to bed would examine the legs and feet daily and look for certain signs, he would be able to detect the thrombosis early. One should ask the patient about any abnormal sensations of the legs as numbness, pain or a sense of coldness. He should look at the legs and feet for changes in color, dilated veins or hemorrhage in the skin or edema. He should palpate the extremity for tenderness of the toes, the feet and the legs. He should also examine the pulses of both legs and feet to determine any diminution of volume. He should detect any sweating of one leg not present in another. If he finds any of these abnormal signs he should accept the possible diagnosis of thrombosis of the deep veins. There is one aid which may help considerably in confirming the diagnosis, and that is an x-ray examination of the deep veins. In many instances one will be able to demonstrate the thrombosis before other positive signs are present. After diagnosis of thrombosis of the deep veins of the leg, the appropriate vein above the level of the clot should be ligated. The major veins of the lower extremity, the femorals, the iliacs and the vena cava can be ligated even if the patient is extremely ill without causing death. The end results are a shorter convalescence, a better leg and often the saving of the patient's life.

DR. FRANK H. KRUSEN, Rochester, Minn.: I recalled the statement by Dr. George Minot "Rest means many things to many persons." He told of a policeman who was advised to rest and promptly took an automobile drive from Boston to California and back in twelve days. To him rest meant change of activity. Another patient was told to rest in bed. She did go to bed at certain hours each day, but she answered the telephone, jotted down notes, took care of all the family affairs, worked out the problems for the day. Rest to her meant lying in bed. When Dr. Ghormley mentioned Hugh Owen Thomas and when Dr. Menninger mentioned Weir Mitchell I thought of Allen K. Krause's book "Rest and Other Things" and his advice to the physician who cared for the tuberculous patient "Rest must be first, and always first, in the treatment of the tuberculous." I tried to think of some one as influential as Weir Mitchell, Hugh Owen Thomas or Allen Krause who would lead us in the opposite direction, and I couldn't think of any one. I thought perhaps we had been following these physicians a little too blindly. Such blind following of the great physicians of the past has always been one of the weaknesses of the medical profession. Confusion with regard to abuse of rest in the arthritic is due to failure to recognize the difference between complete immobilization of the individual and the avoidance of fatigue. They are entirely different. The patient can avoid fatigue and yet maintain all of the joints in complete mobility. Dr. Philip Hench said "The rest school men have discussed rest so much that I think we are even in danger of over-resting our patient. And the dangers of over-rest in arthritis are as great as if not greater than the dangers of overexercise, because when the patient overexercises he promptly knows he has done wrong because of the increased pain, but when he over-rests the results of over-rest work on him silently and maliciously until one suddenly notes serious if not irreparable contractures."

DR. H. CLOSE HESSELTINE, Chicago: Many patients do not rest even though they are confined to bed. Like all therapies, rest if it is to be used properly must be neither too much nor too little but adequate. The woman in industry has, as a rule, a double problem. One is the care of her home; if she is a mother, the care of her family as well. On the other hand, she must be a sufficiently satisfactory employee to keep her job. Good mothers at times do as much work at home as they do on a regular shift at the plant. This necessitates long hours. Failing to give or provide care for the family may encourage or precipitate a social problem in the community. It is evident to the Committee on the Health of Women in Industry of the Section on Obstetrics and Gynecology of the American Medical Association that we must institute an additional program for both the industrial physician and the obstetrician and gynecologist to bring about a proper cooperation of these two groups. This additional advance will benefit the employee and the employer. There are no reliable, conclusive data to help us on the problems of women in industry. Efforts are now under way, through governmental and other agencies, to collect facts about women employees. From such sources we hope to have better foundation for our recommendations. Dr. Eastman has given you his data specifically on child spacing. One might ask whether the longer spacing interval was volitional or accidental, or whether ill health or other conditions contributed to the longer interval. If ill health was partly responsible for the longer interval, then the explanation for the unfavorable outlook for the longer lapse between pregnancies is explained. Outside of the queen bees and perhaps a few other species, those who reproduce are not given a place

8. Menninger, K.: Emotional Factors in Hypertension, Bull. Menninger Clin. 2: 74-88 (May) 1938.

of rest by their society. We have no queens in the human species in this same sense. In the higher levels of life each pregnant animal must supply its own food and self protection. Until we know more we must be very cautious about statements, even though we must be guided by general opinion. Our Committee on the Health of Women in Industry expects to contribute toward a better understanding of women in industry in a fair and equitable manner for both the employer and the employee.

COMMANDER J. MURRAY STEELE, Bethesda, Md.: In connection with Dr. Harrison's remarks about uremia in bed, I had the interesting experience of seeing at least three persons whose renal function was poor, who had considerable nitrogen retention, get up about the wards and go home, and at the same time the degree of nitrogen retention diminished considerably. It did not disappear altogether. In a large proportion of patients with chronic rheumatic heart disease who had been in bed for months, when allowed to get up and their activity increased, it was found that the pulse rate and the sedimentation rate and often the fever all disappeared as the mobility of the joints or the function of their hearts appeared to be increased.

DR. D. J. LEITHAUSER, Detroit: Dr. Powers reported a series of 100 surgical patients subjected to "early rising." I have a series of over 1,300 cases in which more than thirty different surgical procedures had been performed—a diaphragmatic herniorrhaphy, splenectomies, gastrointestinal surgery and the like. There was no case of uncontrolled atelectasis in the series. A cough or two at the first out of bed period would invariably expel the mucous plugs. These exercises in some instances were required every hour or two for several days before the lungs would remain clear. There were no deaths from pulmonary embolism in the series. There was 1 case of thrombophlebitis. The patient had a paravertebral injection of procaine hydrochloride. She left the hospital seven days later. There was no embolism in the series. There are precautions that require emphasis in getting patients out of bed "early." One should not employ catgut in long incisions. Catgut gives a foreign protein reaction, particularly heavy catgut. This delays healing; evisceration may result. I employ alloy steel wire in long incisions. There was no evisceration in this series. How should we get a surgical patient out of bed? First the patient assumes the lateral position, then is assisted to a sitting position. Next, the patient stands beside the bed. The presence of palpable rales is then determined by the nurse while the patient coughs; the cough also expels the mucous plugs. A few paces are now taken if the patient's condition permits, and then the patient returns to bed. A chair is not permitted for any length of time at the first or second out of bed period.

COLONEL E. V. ALLEN, Rochester, Minn.: In the armed forces there are a large number of cases of acute rheumatic fever. The problem of management of subjects with acute rheumatic fever in the Army is not only a problem of management of the individual disease but also the problem of the management of the sick soldier considered in light of his relationship to the Army. The program, aside from specific treatment, consists of rest in bed until the subject has had no tachycardia, no fever, no joint manifestations, and until the sedimentation rate and the electrocardiogram have been normal for seven to fourteen days. This program of rest supposedly has two purposes: the prevention of relapse of acute rheumatic fever and the prevention of cardiac damage. In this discussion I will omit the consideration of the question of whether or not recurrence of acute rheumatic fever results from activity. There is no good evidence that it does. Now I come to the questions which I hope our chairman will be able to answer: What is the evidence that rest in bed prevents development of heart disease in subjects with acute rheumatic fever? Secondly, when may persons with acute rheumatic fever and some evidence of cardiac involvement, either myocardial or valvular, be allowed out of bed? Thirdly, when may subjects with acute rheumatic fever with some type of heart involvement be allowed to resume normal activity? The answers are of great interest. I am reasonably certain that the role of rest in the treatment of acute rheumatic fever has been unduly emphasized. The program as commonly carried out now encourages the development of nonorganic illness which centers about the heart and joints. It is reasonable to ask if harm would result from allowing subjects with acute rheumatic fever to have mild activity, out of bed, whenever they feel well enough. This symposium should encourage physicians to examine critically the present program of prolonged rest in bed as part of treatment of acute rheumatic fever.

DR. DON C. SUTTON, Chicago: I have seen the effects of Dr. Harrison's work in the attitude of certain young and enthusiastic practitioners in their treatment of coronary thrombosis in letting their patients up sooner than I think they should. Some ten years ago Dr. Davis and I tied the anterior descending branch of the coronary in dogs and produced an infarct. Some of the dogs were given sufficient sedatives to lie in the cage, others were allowed up and about and others were forced to use the treadmill. Those kept quiet often had healed infarcts that were almost invisible. The healing properties of a young dog are much more rapid and superior to those occurring in an old arteriosclerotic heart. The only aneurysms we saw of the ventricle were in dogs that had exercised. The only cardiac aneurysms that I have seen have been in patients that have not been kept in bed what I think is a long enough period. What that period should be, none of us know. I do know that in a small autopsy material I have seen hearts, the longest seven weeks after the primary thrombus, in which the infarct looked to me like quite soft granulation tissue. I have seen infarcts at the end of three weeks that could only be described as consisting of the material that is seen in a ripe alligator pear. I have my doubts that such patients should be allowed to exercise very early. Dr. Harrison called attention to the psychosis that develops as a result of prolonged bed rest. I have seen very little of it in patients that are told frankly what they have, the reasons for the rest, and what we can expect at the end of that rest period. I cannot quite see having cardiac patients up and about who have edema of the legs and perhaps dyspnea; I would think the two go together. I feel distinctly that those patients should be kept quiet, that there are other methods of taking care of the dangers of venous stasis, which is a very real danger. Dr. Dock stated that emboli from stasis in auricular fibrillation were more frequent with the patient lying in bed than they were when up and about. After twenty-five years in the Heart Clinic at the County Hospital I am unable to prove a relationship between bed rest and pulmonary or other embolism from auricular fibrillation.

DR. LOUIS N. KATZ, Chicago, Ill.: Rest does not consist only in putting a patient to bed. Emotional rest must also be obtained, worries should be removed, the patient kept from becoming restless and a regimen instituted to make rest less boring. Emotional upsets raise blood pressure and speed up the heart and therefore burden it. Coughing and constipation are other burdens that require treatment. A good night's rest has an amazing effect on cardiac patients. Sedation, including morphine, is an important adjuvant. The patient's position determines how restful his rest may be; the proper use of a bed rest or a reclining easy chair may be indicated. In short, rest is different from just putting the patient to bed. Bad results may not be due to bed rest per se but to the imperfect regimen of rest carried out. In two periods of cardiac convalescence it is safer to err by too long a period of rest than to sin by being less conservative, viz. after a myocardial infarction and after acute rheumatic carditis. I am not concerned that patients with congestive heart failure may not get enough rest because the symptoms and signs will soon put the physician straight. However, following recent myocardial infarction, patients often rebel against the restriction imposed because they feel all right and consider the physician overcautious. The infarcted region

takes a long time to heal, and care must be taken that this region doesn't "blow out" because the heart has not had a sufficient period of relative inactivity. It is better to play safe than to be sorry. The same principle of protracted rest is applicable to active rheumatic fever. A sharp distinction should be drawn between the stages of rheumatic heart disease when the heart is suffering from the scars of the infection and the period when the inflammatory process is still smoldering. As long as there is evidence of a smoldering inflammation of the heart, it is good therapy to keep the patient at rest. Dr. Harrison's fear that in chronic coronary disease invalids may be made by overpampering is justified. There is a tendency to overindulge such patients. However, chronic coronary disease often occurs in aggressive individuals who fail to make sufficient readjustment in spite of symptoms. A real service can be rendered by the physician who can discuss the situation with such a person and help to balance properly his existence between too much and too little activity.

DR. NICHOLSON J. EASTMAN, Baltimore: Dr. Hesseltine asked if the interval was the effect of accident, the effect of intentional child spacing because of social reasons, or the effect of intentional spacing because of disease processes. In a great majority of cases the interval was accidental. In a certain minority it was intentional because of social reasons, particularly among private patients, and in a negligible minority it was intentional because of medical indications.

DR. JOHN H. POWERS, Cooperstown, N. Y.: This program was instituted at the Mary Imogene Bassett Hospital two and one-half years ago. At first we were apprehensive about the results that might be expected. Consequently we started getting patients up on the fourth day, then on the third day, later on the second day and finally on the first day. Now all patients are ambulatory on the first day after all major operations, except in the presence of generalized peritonitis. By that I mean bacterial peritonitis. Patients do get up on the first day after closure of a perforated duodenal ulcer; no untoward effects have been observed. Certain things are compulsory if early activity after operation is to be permitted. Most imperative is accurate reapproximation of tissue with interrupted sutures, preferably of a nonabsorbable nature. I use silk almost entirely. In about 85 per cent of the cases reported silk was used without additional supporting sutures. If catgut is to be used, it is probable that stay sutures of nonabsorbable nature, silkworm gut or silver wire, should be used in conjunction. My experience with catgut alone has not been adequate to form an opinion as to the safety of its use as an unsupported suture material, if early activity is to be permitted. Postoperative thrombosis and embolism comprise two of the unpredictable complications and unsolved problems of surgery. Early activity after operation, walking about, deep breathing and muscular exercises in bed during the periods when the patient is recumbent will do much to reduce the incidence of postoperative thrombosis in the deep veins of the legs and the often fatal catastrophe of pulmonary embolism.

DR. WILLIAM DOCK, Los Angeles: I should like to make a correction. I participated in a symposium presided over by Dr. Gold and have been credited with Dr. Gold's statistics. Dr. Gold was studying the effect of digitalis on auricular fibrillation and brought ambulatory patients into the hospital. These patients were given enforced bed rest. Dr. Gold gave us the actual incidence of pulmonary embolism in this group of patients who were taken out of their ambulatory life for special study as compared with a similar group still attending the clinic. I don't think the emboli came from the auricle; I think they came from the leg and that the patients had thrombosis occurring after a week or two of bed rest. When a patient is put in bed and not allowed to sit on a commode once or twice a day, you are doing something to him that may be unnecessary. I haven't heard anybody introducing evidence that a cardiac patient is better off if he lies in bed than if he sits in an armchair. It is much easier to take care of people with myocardial infarction if they are told that you are going to keep them in one room for three months than if told that you are going to keep them in bed six weeks. The patient gets along much better if allowed to sit in an armchair and sleep comfortably at night, than if kept in bed all day with the indigestion and discomfort of complete bed rest. I agree with Dr. Sutton that people should not run up and down stairs after myocardial infarction, but I don't see that that has any bearing on the point raised here.

DR. KARL A. MENNINGER, Topeka, Kan.: This symposium should begin next year with a discussion of what rest is supposed to mean, whether one is speaking about the posture in which an individual is placed in the sickroom (in bed or in a chair) or whether one refers to the degree of muscular activity that is to be permitted a patient, or whether we have in mind some kind of psychologic rest. The latter concept was introduced by one of the discussers who spoke of a man supposedly resting in bed with telephones and a radio going; this, he said, is not rest. To this I would react by declaring again the basic facts which psychiatric experience has demonstrated. The things that disturb the rest of people are not what they hear on the radio; they are what is in their hearts. It is what has happened to them, what is going to happen to them, what isn't going to happen to them, their own fears, their own disappointments, their own misgivings, theirs, not the radio's. The things that disturb people are not what come from outside; they are what come from inside. As a psychiatrist who sees some but relatively few patients with heart disease, I would certainly see no reason to proscribe the radio. I see a great deal of reason to urge that the cardiologist who really wants his patients to rest should make some attempt to remove from that patient the things that really prevent him from resting, the things that are inside him.

DR. TINSLEY R. HARRISON, Dallas, Texas: I do not believe any one knows the extent to which the activity of the rheumatic process is influenced by the degree of inactivity of the patient. Dr. Sutton found that while exercise carried out by his dogs within the first few days after ligation of a coronary artery produced a larger scar, similar exercise begun six days after the operation had no effect. Is that not correct?

DR. SUTTON: That is right.

DR. HARRISON: According to that, the dog should not exercise on the treadmill for six days. I think we would all agree with that. I too would like to emphasize the dangers of recumbency for a patient with congestive failure. Water in the legs is unsightly, but water in the lungs may be fatal. A person with dropsy gets more water in the lungs when he lies down, because in the body the law of gravity still holds. Concerning the "mushy" infarct: If a patient has a slowly developing infarct, the lesion may remain soft for several weeks. In such an instance the alterations in the leukocyte count and in the sedimentation rate will tend to persist. In my opinion patients should be kept at rest—although not necessarily in the recumbent position—until such manifestations have disappeared and then for perhaps two weeks longer. I agree with Dr. Katz that rest should be neither neglected nor abused. The question is What is neglect and what is abuse? In this regard one has to distinguish between rest for the patient as a whole and rest for the heart. There is no doubt that, as shown by the metabolic rate, the body as a whole expends less energy in the recumbent position. The work of the heart depends mainly on the output and the blood pressure. The blood pressure, when a person is sitting, is—as a rule—a little higher than during recumbency. However, in elderly persons it is often somewhat less in the sitting position. We know that the cardiac output per minute is definitely less sitting than lying. The work of the heart per minute is either about the same or somewhat less when a person sits than when recumbent. Since the heart rate is faster, the work of the heart per beat is definitely less in the sitting position. So far as cardiac rupture is concerned, it is probably the work per beat that is of importance. When we let the patient's body have a little activity, we may be actually resting his heart somewhat more.

THE FUTURE OF PHYSICAL MEDICINE

WITH SPECIAL REFERENCE TO THE RECOMMENDATIONS OF THE BARUCH COMMITTEE ON PHYSICAL MEDICINE

FRANK H. KRUSEN, M.D.
ROCHESTER, MINN.

At last the long delayed development of physical medicine seems to be at hand.

Physical medicine includes the employment of the physical and other effective properties of light, heat, cold, water, electricity, massage, manipulation, exercise and mechanical devices for physical and occupational therapy in the diagnosis or treatment of disease.

Physical medicine is applied biophysics. Dr. Alan Gregg,[1] medical director of the Rockefeller Foundation, said recently "Among my major hopes, let me record the wish that biophysics may be soon recognized as the brother of biochemistry, even if the time is now too late to consider it a twin. . . . One of the natural outgrowths of such a preclinical science might be the now long overdue development of physical therapy in this country."

Physical agents are employed not only for therapy but also for diagnosis; therefore the term physical medicine, long in use in England, is gradually replacing the designation physical therapy in this country. Physical medicine is the more generic and more inclusive term and as defined herewith it embraces physical therapy, occupational therapy and the employment of physical agents for diagnostic purposes.

Physical medicine has developed to a point at which it must be considered as a separate and distinct medical specialty. The recent tremendous interest in this special branch of medicine, culminating in the activities of the Baruch Committee on Physical Medicine, indicates that physical medicine has at last come of age.

Dr. Frank Ober,[2] assistant dean of Harvard Medical School, told me recently "The last war established orthopedic surgery as a recognized specialty. This war may well do the same for physical medicine." But the war is not solely responsible for the sudden maturing of physical medicine.

Since the pioneering days of Dr. Simon Baruch, the father of hydrotherapy in America, there has been a gradual unfolding of all phases of physical medicine until now it is beginning to burst into full scientific bloom.

This development is perhaps due to natural evolution. Dr. W. C. Davison,[3] dean of Duke University School of Medicine, has mentioned that medicine has gone through four periods: (1) a primitive period in which the employment of physical agents played an important role, (2) the renaissance period, (3) the period of pharmacy and (4) the modern period during which we have emphasized successively prevention, pathology, bacteriology, biochemistry, surgery, specific therapy and now we are back to nonspecific and physical therapy, which, Davison concluded, "demands increased study and greater use." We must treat the patient as well as the disease.

From the Section on Physical Medicine, Mayo Clinic.
Read before the Section on Experimental Medicine and Therapeutics at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 15, 1944.

1. Gregg, Alan: A Critique of Medical Research, Scient. Monthly **58**: 365-372 (May) 1944.
2. Ober, F. R.: Personal communication to the author.
3. Davison, W. C.: The Evolution of Therapy—A Plea for Treating the Patient as Well as His Disease, South. Med. & Surg. **100**: 457-458 (Oct.) 1938.

The Council on Physical Medicine of the American Medical Association and more recently the Committee on American Health Resorts have contributed largely toward the development of physical medicine.

Still more recently the National Foundation for Infantile Paralysis, on the advice of a distinguished group of scientists headed by Dr. Walter Cannon, recognized the need for the advancement of physical medicine and provided the first large grant for establishment of a center for teaching and research in physical medicine at the University of Pennsylvania.

The National Research Council has recognized the need for more study of the employment of physical agents, particularly in the management of peripheral nerve injuries, and has made numerous grants for research in this field.

Finally our famed elder statesman and humanitarian Mr. Bernard M. Baruch, impressed with the possibilities of physical medicine by his father, the late Dr. Simon Baruch, appointed a committee headed by Dr. Ray Lyman Wilbur to make a survey and to report on the programs deemed best for adequate development of physical medicine in the United States.

This survey committee was composed of eight men: (1) Dr. Ray Lyman Wilbur, Stanford University, Stanford University, Calif. (chairman); (2) Dr. William T. Sanger, Medical College of Virginia, Richmond (vice chairman); (3) Dr. Frank H. Krusen, Mayo Clinic, Rochester, Minn. (director-secretary); (4) Capt. Charles F. Behrens (MC), U.S.N., Bethesda, Md.; (5) Dr. Carl R. Comstock, Saratoga Springs, N. Y.; (6) Dr. John S. Coulter, Northwestern University, Chicago; (7) Dr. Kristian G. Hansson, Cornell University, New York, and (8) Lieut. Col. Benjamin A. Strickland, Jr., M. C., U. S. Army, Tucson, Ariz.

Eight subcommittees, composing a group of forty scientists, were appointed. These subcommittees dealt with the following phases of physical medicine: (1) teaching, (2) basic research, (3) clinical research, (4) public relations, (5) rehabilitation, (6) hydrology and health resorts, (7) occupational therapy and (8) prevention and body mechanics.

The subcommittees, in turn, consulted directly more than 400 outstanding scientists concerning various phases of their problem.

The survey was begun on Nov. 1, 1943 and the final meeting of the committee was completed on Jan. 30, 1944.

NEEDS OF PHYSICAL MEDICINE

It is obvious that the chief needs for proper development of physical medicine are:

1. An adequate supply of physicians who can teach and use physical medicine.
2. More extensive basic and clinical research in physical medicine.
3. Proper use of physical medicine in relation to wartime rehabilitation and peacetime physical preparedness.

On completion of its survey, the committee recommended the following program for sound development of physical medicine on a lasting basis:

Teaching.—To develop an adequate program in teaching of physical medicine there is need for:

1. More teachers of physical medicine. (This is the preeminent need.)
2. Several extensive graduate courses to train teachers of physical medicine.

3. A central body to promote education in physical medicine.

4. Establishment of three to five centers of physical medicine at large medical schools.

5. Establishment of fellowships in physical medicine.

6. Better teaching of physical medicine to undergraduate medical students.

7. More physical therapy and occupational therapy technicians.

8. A recruitment program to obtain these technicians.

9. Better teaching and correlation of the work of these technicians.

Basic Research.—1. Controlled scientific investigation of the fundamental aspects of physical treatment of disease is of utmost importance in any program which is established for the advancement of physical medicine.

2. Basic research can be organized most economically and effectively where there are expert investigators and when it is associated directly with clinical research and practice.

3. Means should be provided for bringing medical research laboratories into easy contact with the research laboratories of academic institutions and commercial organizations.

4. Quick results are not to be expected from any plan for adequate development of basic research.

Clinical Research.—1. Approved methods for evaluation of clinical research should be employed.

2. Basic and clinical research should go hand in hand.

3. Teaching of physical medicine is done best at medical schools which are conducting adequate clinical research.

Public Relations.—1. Physical medicine has not been given the recognition that it merits by the medical profession or by the public at large.

2. Wide dissemination of appropriate information is necessary. Only through financial support and adequate understanding can a long range program of general information be developed. Intelligent and discriminating publicity which will reach all elements of our population is required.

Rehabilitation.—Medical rehabilitation is the restoration of people handicapped by disease, injury or malformation as nearly as possible to a normal physical and mental state. Medical rehabilitation fills the gap between the customary end point of medical attention and the real necessities of many patients.

In 1940, 4,000,000 persons suffered from permanent physical disabilities and the annual increment was 800,000. In those prewar days the figures were enormous, and since the war they have increased to staggering proportions.

1. Wartime and postwar physical rehabilitation concerns not only the armed services but also industry and the Veterans Administration.

2. The most immediate and pressing problem is to provide needed personnel.

(*a*) There is a definite shortage of physicians trained in physical medicine who would be capable of directing rehabilitation services.

(*b*) There is an acute generalized shortage of physical therapy and occupational therapy technicians. Only one fifth the number required is now available.

3. Industry should cooperate in the placement of handicapped persons in suitable positions. It has been estimated that for every dollar spent for rehabilitation $47 is returned to society.

4. Industrialists need further information concerning the valuable services which partially disabled persons can perform.

5. Industrial physicians need proper knowledge of rehabilitation problems.

6. Cooperation between labor, industry and medicine is essential.

7. Liaison between various rehabilitation services should be good.

8. There is need for a carefully organized over all scheme for rehabilitation of war casualties.

Hydrology and Health Resorts.—There is need for:

1. Basic research in laboratories where there can be sound evaluation of the effects of hydrotherapeutic procedures and spa therapy.

2. Improved teaching of hydrology and spa therapy in medical schools.

3. Better medical supervision of the therapeutic procedures employed at health resorts.

4. More extensive use of existing health resorts for rehabilitation of war casualties.

5. Efforts to prevent the alarming tendency to abandon the use of valuable spas.

Occupational Therapy.—Occupational therapy provides a graded program of activity to restore maximal physical and mental function or seeks to divert a person and improve morale by arousing his interest, courage and confidence.

There is need for:

1. Medical direction of hospital departments of occupational therapy. This is considered necessary for their proper development.

2. Encouragement of programs for training of volunteer aides to assist qualified occupational therapy technicians.

3. Appointment of a qualified field secretary in occupational therapy to assist in spreading correct information, recruiting of students and standardizing courses.

4. Establishment of an information center to demonstrate new educational methods, corrective technics and apparatus employed in modern occupational therapy.

5. Development of a program to encourage more teaching of occupational therapy as part of a suitable course in physical medicine in the medical schools.

Curative Workshops: Curative and sheltered workshops in which both occupational and physical therapy are administered for rehabilitation of the disabled are becoming increasingly useful in various communities. They should be operated under direct medical supervision. Because of their value in relation to the war, their further development should be encouraged and, since physical and occupational rehabilitation should often be given simultaneously with medical and surgical treatment, curative workshops should be organized in conjunction with general hospitals.

Rehabilitation and Industry: Both management and labor should be made cognizant of the importance of rehabilitation centers in which injured war workers can

be given occupational therapy, vocational training and avocational retraining.

Body Mechanics.—Body mechanics is the mechanical correlation of the various systems of the body. Normal body mechanics obtains when this mechanical correlation is most favorable to the function of these systems.

There is a need not only for further investigation of the mechanical correlation of the various systems of the body from the standpoint of static posture but also for a more detailed study of human motion. Furthermore, there is a definite need for careful study of the various manipulative procedures which are employed therapeutically to alter the structural mechanics of the human body.

SUMMARY OF RECOMMENDATIONS OF THE COMMITTEE

Immediate Program.—1. Organization of a central office. The committee believes that there will be need for the establishment of a central office with staff, which should serve as a sympathetic supportive mechanism, to promote and to coordinate, rather than to direct, research in physical medicine. (This office has been established at 597 Madison Avenue, New York 22, with the following personnel: Dr. Ray Lyman Wilbur [chairman], Dr. Frank H. Krusen [director], Dr. Ernest J. Jaqua [educational director] and Miss Grace Keefe [executive secretary].) The committee suggests that this central office should include:

(*a*) A governing board, whose duty should be to distribute the original funds provided by the donor or other funds which may be given for similar purposes. (An administrative board, consisting of Dr. Wilbur, Dr. Krusen and Miss Mary A. Boyle, has been appointed.)

(*b*) An advisory board of experts in physical medicine and related medical fields, to give advice concerning the scientific aspects of research and teaching in physical medicine. (A scientific advisory committee has been established. This committee has the following members: Dr. John Stanley Coulter, Chicago, professor of physical therapy, Northwestern University Medical School and chairman of the Council on Physical Medicine of the American Medical Association; Dr. John F. Fulton, New Haven, Conn., Sterling professor of physiology, Yale University Medical School; Dr. Charles Gordon Heyd, New York, professor of surgery, New York Post-Graduate Medical School, Columbia University, and Past President of the American Medical Association; Dr. Andrew C. Ivy, Chicago, Nathan Smith Davis professor of physiology and head of the department of physiology, Northwestern University Medical School, and consultant to the Bureau of Medicine and Surgery, Navy Department, and to the Planning Division of the Office of the Quartermaster General of the Army; Dr. Chauncey D. Leake, Galveston, Texas, vice president and dean, Medical Branch of the University of Texas; Dr. Frank R. Ober, Boston, John and Buckminster Brown clinical professor of orthopedic surgery and assistant dean in charge of graduate courses, Harvard Medical School; Dr. Winfred Overholser, Washington, D. C., superintendent of St. Elizabeth's Hospital [Washington, D. C.] and professor of psychiatry, George Washington University School of Medicine, and chairman of the Committee on Psychiatry of the National Research Council; Dr. Francis O. Schmitt, Cambridge, Mass., professor of biology and head of the Department of Biology and Biological Engineering, Massachusetts Institute of Technology.)

2. Establishment of teaching and research centers in physical medicine at interested medical schools. The committee recommends:

(*a*) That certain medical schools which are interested should be given early opportunity to determine whether or not they desire to undertake more extensive programs in physical medicine. Furthermore, it is recommended that support be given to the enlarged teaching and research projects in physical medicine in the schools which are selected. These schools should be provided with the subsidies needed for enlargement of their programs and allowed complete freedom in development of their projects. (Three centers have been subsidized.)

(*b*) That all of the medical school centers of physical medicine promote the training of teachers (both medical and technical) in the basic sciences and clinical aspects of physical medicine. (Such centers at a few of our larger interested medical schools could supply the teachers so badly needed in many of the other medical schools. Eventually all approved medical schools should provide adequate teaching of physical medicine.)

(*c*) That one of the medical school teaching and research centers might become a model center in which all phases of physical medicine, including physical therapy, occupational therapy, electronics, hydrology, climatology, manipulative procedures and physical rehabilitation could be developed. (Columbia University College of Physicians and Surgeons has been given $400,000 to establish this model center.)

(*d*) That one of the research and teaching centers devote its major attention to the problems of hydrology, climatology and spa therapy. (The Medical College of Virginia has been given $250,000 to establish this center.)

(*e*) That one of the centers of physical medicine devote its major attention to the preventive and manipulative aspects of the structural mechanics of the human body. (New York University has been given $250,000 to establish this center.)

(*f*) That because of the increased importance of electronics and other physical agents, one of the centers of physical medicine promote the coordination of the work in research laboratories devoted to projects in physical medicine with the work in other research laboratories, commercial and academic, in the hope of furthering the development of electronic and other physical equipment which could be employed in research in, and clinical application to, physical medicine.

(*g*) That one of the centers on physical medicine promote special clinical investigations of the psychologic and psychiatric aspects of physical medicine, with special reference to a study of the value of personal contact between physician and patient, including an investigation of the psychic effect of the "laying on of hands."

(*h*) That all of the centers for physical medicine promote a program for better coordination of physical therapy, occupational therapy, physical rehabilitation and spa therapy.

(*i*) That there should be provided a combination, or team, of workers at each center for physical medicine

(a specialist in clinical physical medicine and appropriately trained and interested laboratory scientists) to coordinate their work and to attract to the center other investigators and workers (both medical and technical).

(*j*) It is essential that centers training physicians and technicians should stress the importance of direct medical supervision by qualified physicians of technicians' work and also the importance of proper training of technical personnel to assist these physicians. Only when both physicians and technicians are thoroughly trained, and they appreciate each other, can there be effective treatment of the patient by physical measures.

3. Establishment of fellowships and residencies in physical medicine. The committee recommends:

(*a*) That support be given to the establishment of fellowships and residencies for interested young physicians, and other scientists, who can be trained in the teaching of such subjects as clinical physical medicine and basic research in physical medicine.

(*b*) That the previously mentioned centers for physical medicine consider training such fellows in hydrology, climatology and spa therapy, as well as in electronics, physical rehabilitation and manipulative procedures, and that special attention be given to kindred subjects, such as industrial medicine, treatment of the aged and treatment of rheumatic diseases, diseases of the blood vessels and diseases of the nervous system. (One hundred thousand dollars has been set aside for provision of such fellowships.)

4. Promotion of teaching of, and research in, physical medicine in all approved medical schools. Many of the medical schools have expressed interest in improving their teaching programs in physical medicine to meet the demands of wartime and postwar rehabilitation. It is recommended that:

(*a*) Support be provided to improve curriculums in physical medicine, in graduate medical schools, undergraduate medical schools and technicians' schools.

(*b*) Support be given to teaching projects by supplying equipment, expert advice and other needs.

(*c*) Teaching projects in physical medicine in all of the sixty-five medical schools of the United States should be encouraged, and there should be included in such teaching projects consideration of all phases of physical medicine, including occupational therapy, manipulative therapy, spa therapy, climatology and physical rehabilitation. Physical medicine should be presented as a required course in every medical school. It is required just as much as any other branch of medicine.

(*d*) Subsidies be provided for a "circuit rider" who is a qualified and outstanding expert in physical medicine to visit and to assist deans and key teachers of interested medical schools in organizing teaching and research programs and developing separate departments of physical medicine. (Many of our medical schools do not now have qualified teachers of physical medicine and will need assistance in finding instructors.)

(*e*) Support be given to permit scientific trips for teachers and research workers in physical medicine, with special emphasis on conferences between workers at physical medicine centers. The underwriting of an annual meeting of the personnel of the various centers would be valuable. Invited speakers could engage in symposiums, and recent advances could be discussed.

(*f*) Support be provided for exploring the possibility of coordinating more fully the practice of physical medicine with other special medical fields, such as psychiatry, dermatology, neurology, orthopedics, industrial medicine, rehabilitation and geriatrics.

(*g*) Support be provided for development, at certain interested medical schools, of short graduate courses in physical medicine for practicing physicians.

(*h*) Support be given for the development, at certain interested medical schools, of postwar "refresher" courses in physical medicine for medical officers who have had some previous training in physical medicine and who are returning to civil life.

(*i*) Support be given to the building up of a medical film library and of other visual and pedagogic aids dealing with various phases of physical medicine and with physical rehabilitation.

(*j*) A special prize be awarded, at intervals, for any suitable outstanding contribution to the field of physical medicine in the hope of stimulating the production of superior scientific presentations.

(*k*) Support be given for the financing of the preparation and publication of scientific books and monographs on physical medicine, including suitable textbooks for technicians and possibly also for the publication of the report of an annual symposium presented by workers at participating institutions. (One hundred thousand dollars has been set aside for support of these projects.)

5. Preparation of reports by the committee. It is recommended that the committee prepare:

(*a*) A special concise report for Mr. Baruch. (This was submitted and Mr. Baruch has given an initial sum of $1,100,000 to activate the program.)

(*b*) A complete printed report on the findings of the committee for the information of the medical profession and the public at large. (This has been published in a 120 page booklet, which can be obtained free of cost from the Baruch Committee on Physical Medicine, 597 Madison Avenue, New York 22.)

(*c*) Certain more detailed reports on specific phases of physical medicine which have been investigated by the committee, for the information of physicians, technicians and laymen. (These will be prepared later.)

6. Promotion of wartime and postwar physical rehabilitation. Because of the constantly increasing responsibility and the urgency required to meet the emergency conditions, it is recommended that prompt steps be taken for meetings of a special committee which will coordinate and correlate all matters pertaining to basic research and rehabilitation in Army, Navy and civilian life; therefore it is recommended that support be given promptly:

(*a*) To wartime physical rehabilitation projects now on their way and to the establishment of a number of new ones.

(*b*) To the promotion of a joint national program for the recruitment of physical and occupational therapy student technicians.

(*c*) To a program for promotion of the use of Army and Navy spa resorts as convalescent and rehabilitation centers.

(*d*) To plans for acceleration and modification of occupational therapy technical training courses in order to meet present day rehabilitation needs.

(*e*) To the subsidizing of technical field secretaries in physical therapy and occupational therapy to coordinate the teaching in technicians' schools in order to meet the demands of wartime rehabilitation. [A committee on war and postwar physical rehabilitation and reconditioning has been established to coordinate these efforts. This committee has the following members: Major Walter E. Barton, M. C., A. U. S., Washington, D. C., assistant director of the Reconditioning Division and chief of the Blind and Deafened Rehabilitation Branch, Office of the Surgeon General, War Department; Capt. Charles F. Behrens (MC), U.S.N., Bethesda, Md., chief of the Radiological Service, Naval Medical Center; Dr. Dean A. Clark, senior surgeon (R) U. S. P. H. S., Washington, D. C., chief medical officer, Office of Vocational Rehabilitation, Federal Security Agency; Dr. Charles M. Griffith, Washington, D. C., medical director, U. S. Veterans Administration; Capt. Frederick A. Jostes (MC), U.S.N.R., Washington, D. C., Office of Rehabilitation, Bureau of Medicine and Surgery, Navy Department; Capt. Howard Montgomery (MC), U.S.N., Washington, D. C., chief of rehabilitation, Bureau of Medicine and Surgery, Navy Department; Col. Howard A. Rusk, M. C., A. U. S., Washington, D. C., chief of Convalescent Division, Office of the Air Surgeon, War Department; Mr. H. V. Stirling, Washington, D. C., director of the Vocational Rehabilitation Service, Veterans Administration; Lieut. Col. Benjamin A. Strickland Jr., M. C., U. S. Army, Tucson, Ariz., commanding officer, A. A. F. Regional Station Hospital, Davis-Monthan Field, Tuczon, Ariz., and formerly head of the Physical Therapy Department, Walter Reed General Hospital; Col. Augustus Thorndike, M. C., A. U. S., Washington, D. C., director, Reconditioning Division, Office of the Surgeon General, War Department, and associate in surgery, Harvard Medical School (on leave of absence), and Dr. William S. Tillett, New York, professor of medicine, New York University College of Medicine, and chairman of the Committee on Convalescence and Rehabilitation of the Division of Medical Sciences, National Research Council.]

Eventual Program.—In conjunction with the eventual program, the committee recommended simply the promotion of certain general projects for the advancement of physical medicine and the adoption of certain resolutions concerning projects on which the committee looked with favor. Space does not permit their discussion here, but this information will be found in the printed report.

REACTIONS TO THE PROGRAM THAT WAS SUGGESTED BY THE BARUCH COMMITTEE ON PHYSICAL MEDICINE

Immediately on announcement of the program of the Baruch Committee on Physical Medicine, widespread approval and enthusiastic endorsement of the project were received. Scientists and laymen alike have been prompt in praising this effort. This led Mr. Baruch to comment that he had never seen anything with which he had been connected—"even the work in the war"—receive such amazingly sympathetic treatment. Leaders in military medicine and in medical science in general gave enthusiastic approval.

In closing, it seems pertinent to quote a few of these statements:

MAJOR GEN. NORMAN T. KIRK: "The Medical Department of the Army is vitally concerned with any new scientific enlightenment in this field, especially as it pertains to reconditioning of wounded soldiers and sailors. You are to be highly commended for the inauguration of a much needed scientific approach to the physical aids to medicine and especially its bearing on the program of restoration of function and salvage of manpower."

VICE ADMIRAL ROSS T. MCINTIRE: "The Medical Department of the Navy is in complete accord with the principles and recommendations laid down in your report to Mr. Baruch. I can assure you that the Bureau of Medicine and Surgery will give every assistance possible to the successful carrying out of your program."

MAJOR GEN. DAVID N. W. GRANT: "Mr. Baruch and your committee have rendered an invaluable service, and now, with the establishment of a permanent committee and the splendid endowment fund, the work in this field is bound to be greatly accelerated and should make valuable contribution both to military and to civilian medicine."

GEN. FRANK T. HINES: "A splendid opportunity for public service exists in the field contemplated. I will give it my full cooperation and whatever help I can to make it a success."

DR. LEWIS H. WEED, Chairman, Division of Medical Sciences, National Research Council, Washington, D. C.: "I have carefully read the tentative report of the Baruch Committee on Physical Medicine. . . . Please know that I am tremendously interested in the whole potential program of the Baruch committee. It represents a most needed development in this country and I am sure that progress will be forthcoming by proper contemplation of the important initial steps."

DR. FRANCIS O. SCHMITT, Massachusetts Institute of Technology, Cambridge, Mass.: "I should like to express great admiration and appreciation for the thoroughness with which the committee has explored the various possibilities in this important field and for the concise manner of presentation of the conclusions in the report. It is a monumental document, and, if the major points in the program can be brought to realization, medicine and the general public will be greatly indebted to your committee."

DR. EMORY W. MORRIS, President, W. K. Kellogg Foundation, Battle Creek, Mich.: "I have reviewed the report of the Baruch Committee on Physical Medicine with a great deal of interest. I agree with the report in general; in fact, it is excellent."

DR. DONALD C. BALFOUR, Director, Mayo Foundation, Rochester, Minn.: "I am gratified that such a complete and comprehensive report on the status of physical medicine has been made in such a short time. . . . Anything that will contribute to the better physical and mental health of the people of this country and to the development of teaching methods should be encouraged to the utmost, and I am sure that the general objective of the Baruch Committee will meet with an enthusiastic response. Mr. Baruch's generous gift in support of the program of the committee is another evidence of his keen vision and kindly altruism."

DR. ALAN GREGG, Director of Medical Sciences, the Rockefeller Foundation, New York: "I would like to convey to you my admiration for the work you have done, since it is a very definite accomplishment, and something that I am proud to be related to, even in a very secondary role."

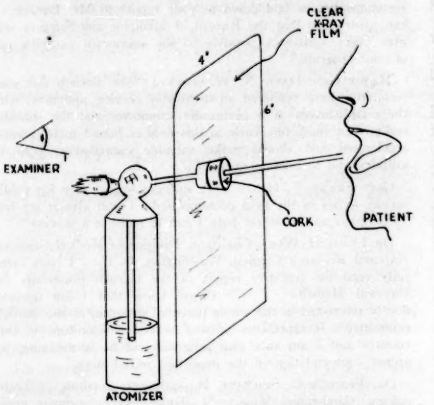
Up until recently with regard to the advancement of physical medicine, as with the weather, every one has talked about it but no one has done anything. Now it is apparent that something very definite is being done and that my opening statement is justified. At last the long delayed development of physical medicine seems to be at hand.

Clinical Notes, Suggestions and New Instruments

PROTECTION OF DOCTORS AND NURSES WHILE SPRAYING THROATS

CAPTAIN R. V. L. CAMPBELL
MEDICAL CORPS, ARMY OF UNITED STATES

The accompanying sketch illustrates a method of protecting nurses and doctors while spraying throats with an atomizer. The x-ray film affords good visibility and protects not only the face but the hand of the operator if the film is extended



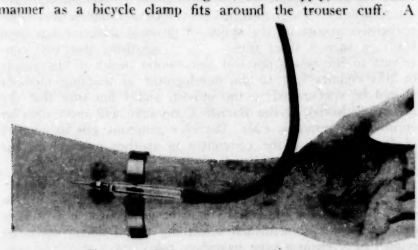
Method of protecting doctors and nurses while spraying throats.

low enough to cover the hand holding the atomizer. This can be made in five minutes from the materials usually found in a doctor's office.

A CLAMP TO HOLD INTRAVENOUS NEEDLE IN PLACE

MAJOR LOUIS K. PITMAN
MEDICAL CORPS, ARMY OF THE UNITED STATES

This is a simple device for holding an intravenous needle in place. It consists of a clamp which fits comfortably around the forearm without constricting the blood supply, in the same manner as a bicycle clamp fits around the trouser cuff. A



Clamp to hold intravenous needle in place.

smaller clamp mounted on a swivel which also allows some forward and backward movement is attached to the larger clamp. This small clamp holds a glass tube into which a needle is fitted. The needle is thus kept in a steady position and the use of adhesive tape is eliminated.

The clamp can be put in place and removed very quickly and easily.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

Austin E. Smith, M.D., Secretary.

ESTROGENIC SUBSTANCES (Water soluble).—Premarin.—An amorphous preparation containing the naturally occurring, water soluble, conjugated forms of the mixed estrogens obtained from the urine of pregnant mares.

The principal estrogen present in estrogenic substances (water soluble) is sodium estrone sulfate. Varying small amounts of other equine estrogens and relatively large quantities of nonestrogenic material are also present in the mixture. The total estrogenic potency of the preparation is expressed in terms of an equivalent quantity of sodium estrone sulfate.

Actions and Uses.—Water soluble estrogenic substances are used in the same conditions for which other estrogenic substances are employed.

Dosage.—For the control of menopausal symptoms, 1.25 mg. is usually sufficient. If after a few days of treatment the response is not satisfactory, the dose may be increased. After symptoms have been brought under control the dosage can usually be reduced. For the treatment of senile vaginitis, kraurosis vulvae and pruritus vulvae, 1.25 to 3.75 mg. daily should be sufficient.

Preparation.—

Estrogenic substances (water soluble) may be prepared in the following manner: To fresh urine from mares pregnant five months or longer, sufficient xylene is added to prevent hydrolysis of conjugated estrogens. The urine is then concentrated under reduced pressure at 40 to 50 C., the *p*H being maintained at or near neutrality. The urine concentrate is extracted several times with water-saturated butyl alcohol. The butyl alcohol extracts are washed several times with tenth-normal sodium hydroxide, then twice with small volumes of water and then concentrated to a small volume under reduced pressure at 40 to 50 C.

The concentrate is taken up in acetone and, after the insoluble material has been removed, the acetone solution is concentrated to a small volume. The acetone concentrate is treated with an excess of ether and the precipitate obtained is removed and dried. This precipitate, which varies in color from reddish brown to almost white, is an amorphous, hygroscopic powder possessing a characteristic odor. It is soluble in water, dissolving freely to form a pale yellow solution; soluble in alcohol and acetone; insoluble in benzene and ether.

Estrogenic substances (water soluble) may also be removed from the urine of pregnant mares by selective adsorption and elution. The eluate may be purified by solvent partition and finally reduced to powder in a vacuum dryer.

Estrogenic substances (water soluble) are assayed chemically by a modification of the phenol sulfonic acid colorimetric method introduced by Kober and biologically by oral administration to adult ovariectomized rats, using the technic of Kahnt and Doisy. The standard of reference for the chemical assay is the international standard for estrone. This standard being inapplicable to the biologic assay of conjugated estrogens, in the rat assay biologic variation is controlled by the use of a house standard preparation of conjugated estrogens.

AVERST, MCKENNA & HARRISON (U. S.) LTD.

Premarin Tablets: 1.25 mg.

U. S. trademark 397,925.

CITRATED NORMAL HUMAN PLASMA (See New and Nonofficial Remedies, 1944, p. 533).

The following dosage forms have been accepted:

HYLAND LABORATORIES, LOS ANGELES

Normal Human Plasma: 300 cc. bottle containing dextrose 5 per cent and preserved with merthiolate 1:10,000.

Normal Human Plasma (Dried): 250 cc. ampul containing a sufficient amount to yield 250 cc. of restored plasma, preserved with 1:25,000 phenylmercuric borate; packaged with a 250 cc. bottle of distilled water containing phenylmercuric borate 1:100,000 as a preservative.

ASCORBIC ACID (See New and Nonofficial Remedies, 1944, p. 620).

The following additional dosage form has been accepted:

THE SMITH-DORSEY COMPANY, LINCOLN, NEB.

Tablets Ascorbic Acid: 50 mg.

NICOTINAMIDE (See New and Nonofficial Remedies, 1944, p. 617).

The following dosage form has been accepted:

AMERICAN PHARMACEUTICAL CO., INC., NEW YORK

Tablets Nicotinamide: 50 mg.

MEDICAL EDUCATION IN THE UNITED STATES AND CANADA

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PROBLEMS IN MEDICAL EDUCATION

The Council on Medical Education and Hospitals presents a series of articles on topics of current major importance in medical education. The first of these is a report on further education desired by medical officers after the present war. This study is being conducted by the Committee on Postwar Medical Service, with which the Council on Medical Education and Hospitals operates in close collaboration. This committee was established in February 1943 by the American Medical Association with the cooperation of the American College of Physicians and the American College of Surgeons. There is also representation on the committee from the Association of American Medical Colleges, the American Hospital Association, the Catholic Hospital Association, the Federation of State Medical Boards of the United States, the Procurement and Assignment Service, the Advisory Board for Medical Specialties and the Veterans Administration.

FUTURE EDUCATIONAL OBJECTIVES OF MEDICAL OFFICERS

Harold C. Lueth, Lieutenant Colonel, M. C.
Surgeon General's Liaison Officer

Objectives in future medical educational training were derived from information from the results of returned questionnaires of medical officers, a review of the probable educational facilities that will be available to veterans after the war, official actions of the Council on Medical Education and Hospitals, the Advisory Board for Medical Specialties and other representative bodies and informal discussions with medical officers, deans and leaders in medical education and hospital administration.

At the request of the Committee on Postwar Medical Service a questionnaire was devised and mailed to 3,000 medical officers on duty with the armed forces. The questionnaire consisted of five parts: general information, educational, industrial, licensure and economic. A preliminary report of the results of the first 927 returned questionnaires was published in the JOURNAL, June 24, 1944, page 558.

One thousand questionnaires were reviewed from an educational point of view. The questionnaires were mailed to every fifteenth name on an alphabetical list of all officers on duty with the Army, Navy and Public Health Service in the belief that a fair sample was obtained. The number of returned questionnaires indicated that information was returned from nearly every area in the world to which our troops in numbers are on duty. As further replies are received they will be tabulated and additional reports made.

Questionnaires were divided into six groups for study on the basis of date of graduation from medical school. It was felt that dates of graduation would be a better index than age of medical officers in the determination of future medical education desired. In the original report the questionnaires were divided into four groups according to year of licensure; however, an additional breakdown into smaller groups, especially of the recent graduates, was believed to yield more profitable information. Group 1 consisted of those graduated from 1941 to 1943 inclusive. Group 2 included the graduates of 1938 to 1940 inclusive, and group 3 the graduates of 1935 to 1937. In the original report group 1 consisted of those who were licensed in 1937 to 1943. Group

4 consisted of those graduated in 1930 to 1934 inclusive; group 5, 1920 to 1929, and group 6, those graduated prior to 1920.

There was the following number of officers in each group:

Group No.	Years of Graduation	Desire No Educational Courses	Desire 6 Months of Unspecified Period	Desire More Than 6 Months' Training	Total	Per Cent
1	1941-1943	4	41	119	164	16
2	1938-1940	21	38	148	207	21
3	1935-1937	39	82	69	190	19
4	1930-1934	63	79	80	222	22
5	1920-1929	60	82	38	180	18
6	Before 1920	17	16	4	37	4
Total		204	338	458	1,000	100

NOTE.—This table refers to number of officers and not to number of courses. All the following tables give the number of courses and not the number of officers.

Questionnaires were carefully analyzed in an effort to obtain as much information as possible concerning future medical educational plans. Many men requested courses in several subjects. Each request for a specific course of instruction was tabulated except when a request was made for more than three different subjects in a short period of time. The latter were entered as requests for general courses. All requests for refresher, "brush-up" and review courses or "visiting clinics" were also tabulated as general courses.

Educational requests were made for varying periods of time. A specific request, such as three months or two years, was easily tabulated. An average was used when requests were for two periods. For example, requests for six to twelve months or one to three years were counted as one nine month course and one two year course respectively. Also some men requested short six month review courses in addition to more definitive courses of several years' duration, and both requests were counted. Consequently there were more requests for courses than officers in some groups.

Each group was subdivided into three sections depending on the amount of training that was requested:

(*a*) No further training: Officers who desired no future training or who failed to answer that part of their questionnaire were considered as one section.

(*b*) Review courses: Men who requested a specified time up to six months were considered as those desiring review courses and were thus classified. In addition, men who did not give a definite time of training and from whose questionnaires it appeared they desired a short future course were also grouped as requests for review courses.

(*c*) House officerships: The third section comprised those men who expressed a desire for definitive training of more than six months that could be considered as residency or fellowship training. Questionnaires from men whose residency was interrupted by an early call to military duty and who requested "time enough for completion of board" were marked as requests for one or more years of study, depending on the amount of residency.

A detailed analysis of the six groups showed the following significant results:

GROUP 1 (GRADUATES OF 1941 TO 1943)

Almost all recent graduates came directly from their hospital training into the armed forces. There were only four questionnaires with the educational section unmarked submitted by men who came directly from internship. The remainder desired additional training.

Men Who Want Six Months or Less of Future Education.—More than one quarter of the graduates of 1941 to 1943 inclusive desired a future training course of six months or less. There were 32 who came directly from internship and 8 who came from a residency. In many instances the residency was interrupted before its normal completion. There were 6 requests for three month training courses and 23 for six month courses. Thirteen men made 26 requests for short courses but did not specify the time they desired to utilize for educational purposes. The following number of requests were made for courses in the following specialties:

Pediatrics	2	Pathology	1
Psychiatry and neurology	2	Otolaryngology	2
Orthopedic surgery	1	Surgery	10
Radiology	1	Anesthesiology	1
Obstetrics and gynecology	2	Neurologic surgery	1
Internal medicine	11	General	21

Many men failed to answer the questions concerning the location at which they desired their future training. About one third, or 15, did not give the name of an institution. Training was desired by the remainder at either specific locations, such as hospitals or medical centers, or geographic areas, such as cities or states. The following number of cities or locations were requested:

Boston	4	Philadelphia	1
Chicago	4	Baltimore	1
New Orleans	4	Ann Arbor, Mich.	1
New York	2	Rochester, Minn.	1
California	2	St. Louis	1

Men Who Want More Than Six Months of Future Training.—More than two thirds of the recent graduates in group 1 desired quite extensive educational courses. There was a total of 119 men, of whom 99 entered the armed forces directly after internship. There were 16 who came from a residency, many of whom had their training interrupted. Only 1 of the section came from general practice and 1 from special practice.

There were 29 requests for a one year course of study, 55 requests for a two year course of study and 57 requests for three or more years of study. In addition there were 3 requests for a short six month refresher course by men who wanted either a two or a three year course in some definite specialty. There were no requests for a nine month course of study. The following number of requests were made for the following specialties:

Pediatrics	5	Pathology	2
Psychiatry and neurology	4	Ophthalmology	1
Orthopedic surgery	5	Otolaryngology	3
Dermatology and syphilology	1	Surgery	52
Radiology	1	Anesthesiology	1
Urology	4	Neurologic surgery	3
Obstetrics and gynecology	20	General	11
Internal medicine	28		

Many men failed to answer the question concerning the institution at which they desired their training, and others named several institutions. An institution was not named in 31 questionnaires. The remaining number of men furnished at least 2 or more requests for the following cities or locations:

Boston	14	Philadelphia	4
Rochester, Minn.	9	New York	3
Chicago	8	Baltimore	2
Ann Arbor, Mich.	6	California	2
Ohio	6	New Orleans	2
St. Louis	6	Washington, D. C.	2
Minneapolis	4		

GROUP 2 (GRADUATES OF 1938 TO 1940 INCLUSIVE)

Medical Officers Who Do Not Desire Any Additional Training.—A small group, or 21 medical officers, failed to indicate any desire for additional training. Seven of the men definitely marked their questionnaires that they did not desire further medical education, and 14 left that part of their questionnaires blank. Most of the men came from hospital service or practice. There were 2 who had left internships and seven residencies to enter the service. About one half of the men, or 11, were actually engaged in some practice, such as 6 in special practice, 3 held full time positions and 2 were in general practice. The American board had certified 3 of the men in special practice and 2 had received partial certification.

Men Who Want Six Months or Less of Future Education.—A total of 38 medical officers comprise the section of men in this category. About one third of them had left their hospital training period for duty with the armed forces. Two came into the Army after internship and 8 into the service directly after residency. Seventeen men were in general practice prior to their military service, and 9 were in specialty practice, of whom 3 were certified specialists. One man held a full time position.

Most of the men desired a review course of three to six months' duration. There were 18 requests for three month training courses, 21 for a six month training course, 4 for a two month training course and none desired a one month training course. The period of training was not specified on 16 questionnaires. Courses were selected in the following subjects:

Pediatrics	1	Orthopedic surgery	1
Radiology	1	Otolaryngology	1
Psychiatry and neurology	3	Surgery	10
Obstetrics and gynecology	10	Anesthesiology	1
Internal medicine	11	General	20

The institution at which training was desired was not mentioned by 18 medical officers. There were requests that training be given in the following communities by the following number of men:

California	3	New York	1
Chicago	3	Baltimore	1
Boston	2	Washington	1
Vermont	2	Tennessee	1
Pennsylvania	2		

Men Who Want More Than Six Months of Future Education.—About two thirds of the graduates of 1938 to 1940 inclusive desired definite future educational training courses. There were 148 medical officers in the section who wanted six months or more of training. About one half of the men came into the service directly after internship (32) or residency (40). Men who came from practice were in general practice (26), special practice (16) or full time medical practice (11). Requests came from 148 medical officers: 5 for nine month courses, 67 for one year courses, 56 for two year courses and 39 for three year courses or more. Only 2 of the section had American board certification and 5 had partially completed requirements. The following number of requests were made in the following courses:

Pediatrics	9	Pathology	5
Psychiatry and neurology	6	Ophthalmology	3
Orthopedic surgery	6	Otolaryngology	4
Dermatology and syphilology	1	Surgery	53
Radiology	4	Public health	1
Urology	2	Anesthesiology	3
Obstetrics and gynecology	27	General	12
Internal medicine	31		

About one third of the men failed to indicate an institution at which they desired their postgraduate training. Requests for courses by at least 2 men were given for the following locations:

Chicago	19	Philadelphia	5
New York	19	St. Louis	4
Boston	15	Minneapolis	4
Rochester, Minn	14	Iowa City	4
Ohio	7	Ann Arbor, Mich	3
California	6	Baltimore	2
New Orleans	5		

GROUP 3 (GRADUATES OF 1935 TO 1937 INCLUSIVE)

There were 39 officers who either did not desire additional medical educational training or who left their questionnaires concerning future plans blank. Most of the men, 21 medical officers, were in special practice before they entered duty and 5 were in general practice. Seven of the group held full time positions before entering military service. About one fourth of the section, or 10, were certified by an American board, and 2 others of the section had been partially certified. It appears that the latter could qualify for certification by a return to their civilian practice.

Medical Officers Who Desire Six Months or Less of Future Education.—A group of 82 medical officers signified that they desired some future medical educational training either of six months or of an undetermined period of time. About half of the section were in general practice (40) and the others in special practice (33) before they entered military service. Full time positions were occupied by 6 of the section, of whom 2 were medical teachers in medical schools. About one fourth of the entire section, or half of those engaged in special practice, had been certified by an American board. One medical officer was in the process of certification. Short refresher medical courses were desired by a majority of the men. Requests varied, 12 wanting a one month course, 7 a two month course, 26 a three month course, 52 a six month course and 19 an unspecified time. Requests were made for courses in the following specialties:

Pediatrics	5	Pathology	2
Psychiatry and neurology	4	Ophthalmology	6
Orthopedic surgery	3	Otolaryngology	3
Dermatology	1	Surgery	18
Urology	1	Anesthesiology	3
Obstetrics and gynecology	23	General	18
Internal medicine	29		

A variety of answers followed the location at which instruction was to be given. Requests varied from specific institutions, such as the Massachusetts General Hospital, the Presbyterian Hospital of Chicago and University of Minnesota, to cities and to general geographic locations, such as a Midwestern or Eastern city. The following centers were chosen by 2 or more men as being the most helpful in arranging for suitable postgraduate refresher courses:

Boston	11	Baltimore	3
New York City	8	California	3
Chicago	7	St. Louis	2
Philadelphia	5	Cincinnati	2
Rochester, Minn	3	Minneapolis	2

Medical Officers Who Want More Than Six Months of Future Training.—A section of 69 medical officers in group 3 expressed a desire to have longer periods of study than refresher courses. In the main the requests were for residencies or hospital fellowships. A few of them signified the desire of one year senior internships to be followed by suitable residency and then a specialty. A great number of these men were

in general practice (38) before entering the armed forces. There were 18 in special practice, of whom 8 had been certified by the American board and one was in the process of certification. Full time appointments were held by 12 of the section. A definite residency or fellowship was desired by 36 for one year, by 24 for two years and by 8 for three years, and 4 requested nine month courses.

The courses of instruction included:

Pediatrics	1	Ophthalmology	6
Psychiatry and neurology	3	Otolaryngology	4
Orthopedic surgery	3	Surgery	17
Radiology	4	Public health	1
Urology	3	Anesthesiology	2
Obstetrics and gynecology	5	Neurologic surgery	1
Internal medicine	11	General	9
Pathology	2		

Institutions were grouped in various centers in the tabulation of requests of medical officers. There were the following requests for the specific locations:

Philadelphia	13	Rochester, Minn.	4
New York	9	New Orleans	3
Boston	8	St. Louis	3
Chicago	7	Minneapolis	2
Baltimore	5	Pittsburgh	2
California	5		

Group 4 (Graduates of 1930 to 1934 Inclusive)

The graduates from medical schools during the years 1930 to 1934 inclusive were studied as a group.

Men Who Do Not Desire Any Future Medical Training.—There were 63 officers who did not desire any additional training. There were 43 men engaged in special practice before they entered active duty and 13 in general practice. Full time medical practice on a salary basis was indicated by 4 of this section. About two thirds of those in special practice were certified by an American board, or 29 officers. It was not surprising that this section of men do not desire any additional training, since more than three fourths of them indicated a strong desire for an early return to private practice.

Men Who Desired Six Months or Less of Future Education.—A group of 79 officers comprised this second section, of whom 35 indicated a training period of three months or less. The section was about equally divided between general practitioners (32) and specialists (35) prior to their entries into military service. Over one half of the latter, or 19, were certified by an American board. One officer held a full time salaried position. There were 11 requests for one month training periods, 8 for two month training periods, 28 for three month training periods and 46 for six month training periods. Seventeen requests did not specify the length of course. Postwar training was indicated in the following specialties:

Pediatrics	2	Pathology	1
Psychiatry and neurology	3	Ophthalmology	6
Orthopedic surgery	2	Otolaryngology	4
Dermatology and syphilology	1	Surgery	20
Radiology	4	Public health	1
Urology	2	Neurologic surgery	2
Obstetrics and gynecology	15	General	30
Internal medicine	17		

The name of the institution was not mentioned in about one half of the instances, or in 37 questionnaires. The following localities or cities were requested most frequently:

New York	11	Rochester, Minn.	3
Chicago	4	Ann Arbor, Mich.	2
New Orleans	4	Baltimore	2
Boston	3	Minneapolis	2
Philadelphia	3		

Men Who Want More Than Six Months of Future Training.—A total of 80 officers requested additional training in excess of six months. There were 43 in general practice and 33 in specialty practice. Of those in special practice, 14 were certified by an American board. There were 4 who held full time appointments, 1 of whom was a hospital administrator.

The amount of time that 17 requested was nine months, 48 one year, 23 two years and 5 three years.

The courses desired were as follows:

Pediatrics	1	Internal medicine	9
Psychiatry and neurology	4	Ophthalmology	14
Orthopedic surgery	2	Otolaryngology	13
Dermatology and syphilology	1	Surgery	23
Radiology	3	Plastic surgery	1
Urology	3	Hospital administration	1
Obstetrics and gynecology	7	General	11

The institutions at which training was desired was not mentioned in 28 cases. The following cities were named at which training was desired:

New York	14	Baltimore	3
Philadelphia	12	New Orleans	3
Boston	10	Ann Arbor, Mich.	2
Chicago	7	St. Louis	2
Rochester, Minn.	6		

Group 5 (Graduates of 1920 to 1929 Inclusive)

Men Not Interested in Additional Educational Training.—An analysis of 60 men in group 5 who were not desirous of having additional training or undecided in the matter was undertaken. Thirteen of the section were in general practice, 2 held full time positions and the remainder (45) were in specialty practice. An analysis of the 36 men in the section who have specialty board certification and want no further education shows that most of them plan to reengage in private practice in their previous locality.

Men Who Desire Six Months or Less of Future Education.—A future educational program of six months or less was selected by 82 men in the section. Graduates of 1925 or later represented a majority of the section. Requests indicated that 9 desired a one month training course, 5 a two month course, 27 a three month course and 31 a six month course. There were 21 requests for courses of unspecified time. Forty-five of the section had previously been in specialty practice, of whom 18 were certified by American boards and 27 were in general practice. All requests indicated a type of review of refresher course. Future training was requested in the following specialties:

Pediatrics	5	Ophthalmology	5
Psychiatry and neurology	4	Otolaryngology	4
Dermatology and syphilology	5	Surgery	24
Radiology	2	Public health	1
Obstetrics and gynecology	6	Anesthesiology	1
Internal medicine	26	Neurologic surgery	1
Pathology	1	General	8

Training was desired at either specific institutions such as hospitals or medical centers, or geographic areas such as large Eastern cities and Midwestern cities, and followed closely that reported by previous groups.

Men Who Want More Than Six Months of Future Training.—There were 38 in this section, of whom about three fourths graduated after 1925. Eleven had been in general practice before their entry into the armed services and 15 mentioned specialty practice. A nine month course was indicated by 9, one year's training by 25, two years by 6 and three years by 1 officer.

The following specialties were selected:

Pediatrics	2	Pathology	1
Psychiatry and neurology	3	Ophthalmology	1
Orthopedic surgery	1	Otolaryngology	3
Dermatology and syphilology	1	Surgery	7
Radiology	1	Public health	1
Urology	1	Hospital administration	1
Obstetrics and gynecology	3	General	7
Internal medicine	8		

The training was desired in a wide variety of institutions located as follows:

New York	7	Boston	4
Chicago	5	California	4
Rochester, Minn.	5	Ann Arbor, Mich.	3
Philadelphia	5	New Orleans	3

The institution at which training was desired was either left blank or marked with a question mark on 24 questionnaires.

GROUP 6 (GRADUATES PRIOR TO 1920)

The oldest and smallest group consisted of 37 officers, 17 of whom did not desire any additional training or left the educational portion of their questionnaire blank. There were 16 men who requested 19 courses of six months or less, among whom 6 specifically asked for general courses. Requests were made as follows:

Pediatrics	1	Surgery	4
Psychiatry and neurology	1	Hospital administration	1
Dermatology and syphilology	1	General	6
Internal medicine	5		

Four officers requested one year courses. Two requested courses in surgery, 1 in pathology and 1 a general course.

The following table summarizes the requests for educational courses by subjects for all six groups:

	Short Courses (6 Months or Less)	Long Courses (More Than 6 Months)	Total Courses
Anesthesiology	6	6	12
Dermatology and syphilology	8	4	12
Hospital administration	1	2	3
Internal medicine	99	87	186
General medicine	103	51	154
Neurologic surgery	4	4	8
Obstetrics and gynecology	56	62	118
Ophthalmology	17	25	42
Orthopedic surgery	7	17	24
Otolaryngology	14	27	41
Pathology	5	11	16
Pediatrics	16	18	34
Plastic surgery	0	1	1
Psychiatry and neurology	17	20	37
Public health	2	3	5
Radiology	8	13	21
Surgery	86	154	240
Urology	3	13	16
Total	452	518	970

This report is based on early returns from a pilot questionnaire and should be considered a preliminary statement. As further replies are received, they will be analyzed and published.

EXPANDING FIELDS IN MEDICINE AND MEDICAL EDUCATION

Wartime experiences in medical care for the armed forces and for civilians have accentuated the growing importance of certain fields in medicine, including neuropsychiatry, public health, industrial health, physical medicine and tropical medicine. The place of these expanding fields of modern medicine in undergraduate and graduate medical education is discussed in the following papers:

NEUROPSYCHIATRY

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Psychiatry has reached another crossroad in its evolution. Whether it maneuvers its way through the traffic will depend not alone on psychiatrists but on all organized medicine. It is no mere figure of speech to say that we are experiencing a worldwide psychosis. If we include in the concept of health the mental status of an individual, never in the world's history have we had such an unhealthy state. Just as the widespread serious epidemic of a serious disease commands the attention of all organized medicine, so should the present advanced mental disease of the world arrest the interest of all organized medicine. It should demand our attention to direct an attack on the causes, an understanding of the symptomatology, immediate measures of treatment and ultimately the prevention of a recurrence.

The war situation has developed the need for and the unlimited opportunities open to psychiatry. At every turn in the selection and training of our huge army, we are confronted with psychiatric problems. As we wage the war, more develop, and as our soldiers and sailors return, we shall meet still more. Already we have discovered acute needs for psychiatric knowledge and practice. First, in our efforts to form this army we have observed at the selection level that there is an alarmingly high frequency of personality deviates in our civilian population, and a considerable number of men have been regarded as unfit to be fighting men in the Army. A second observation has been in our army hospitals, where we have had many psychiatric disorders, a majority of which are manifest as physical complaints. They are, in part, the result of the tough adjustment required plus the additional factor that a man in the Army does not have the opportunity or privilege of managing his life as he did as a civilian. In the Army, if he becomes distressed, whether it be overtly manifest in his emotions or disguised through his stomach, he becomes a patient in the hospital. A third observation has been the fact that combat conditions may make any normal man into a psychiatric casualty.

These observations and their implications in our large army confront us with the realization that the needs of psychiatry are greater than they have ever been. This does not necessarily mean that the incidence of psychiatric disorder is greater than it has been, but the job at hand compels us to face the situation and deal with it. On the other hand, many of these same borderline individuals in civilian life were not conspicuous. In many instances these problems were not assumed to be of medical concern. Because a man could apparently function in his civilian life, he did not demand our attention. We can be sure however that, like invisible taxes, this state of affairs cost us heavily. When we set about to form a fighting army we aggressively sought every man who could do a hard, exacting job—a job that required every man to be in first class condition. Then we subjected him to a task which in itself has proved that it can break the best integrated

individual. The total experience has forced us to become more acutely conscious of the psychiatric needs that obviously exist in our civilian population; our army hospital experience has forced on us in vivid fashion the recognition of the fluidity between the psyche and the soma when a man is placed under great pressure.

Psychiatric Manpower.—There are approximately 150,000 physicians in the United States. There are approximately 3,000 members of the American Psychiatric Association, which will include 90 per cent of the qualified men in this field. In the Army there is roughly 28 per cent of the membership of the American Phychiatric Association, with a considerable number of other medical officers less well trained and less experienced who nevertheless are functioning in the field of neuropsychiatry. Although no figures can be given, it is obvious that the number available is far out of proportion to the amount of work that needs to be done. As the Surgeon General, Norman T. Kirk,[1] has said, roughly 50 per cent of all civilian patients of all doctors are suffering from physical ailments growing out of emotional disturbances. Furthermore, psychiatrists belong to the scarcest category of medical specialists, both within the Army and in civilian life.

Obviously, there never will be enough psychiatrists if only specialists in this field attempt to deal with all psychiatric problems. The only solution lies in the better training and education of all physicians in the field of personality disorders, their recognition, their manifestations, their scientific treatment and their prevention. The distressing fact remains that, to date, the average physician is not equipped for this function. We see this manifested in both his attitude and his practice, and it makes little difference if our observation is made of the physician in civilian practice, in the army dispensary, in a gastrointestinal clinic, in the army hospital cardiovascular ward or in the private office. The attitude varies somewhat, depending on the physician's relationship to the patient, and there is considerable contrast in the environmental situation in civilian practice and in army practice. The attitudes assumed by the physician toward the neuropsychiatric patient are a direct reflection of his understanding and his skill in this field. Fortunately, many such patients receive excellent medical care. On the other hand, too often the patient with functional complaints is diagnosed only by the exclusion of organic difficulties. He is often subjected to indiscriminate and prolonged hospitalization with frequent laboratory testing and x-rays and occasionally he may even have an unnecessary operation or, if the operation is elective, he ends up in a worse state than before the operation. He may be treated with indifference or accused of malingering or given merely symptomatic treatment. Not infrequently he is told that nothing is the matter with him. Unfortunately, he is occasionally aggressively scolded or punished. It is an unpleasant fact for all of us in American medicine to face, and particularly medical educators, that the average physician does not understand or know how to treat minor (or major) personality disorders. He too often fails to recognize them as medical problems.

The obvious conclusion about this situation indicates, first, that the average physician has had insufficient training in our medical schools to understand the personality and its deviations. We have made great strides in the improvement of our teaching of psychiatry in medical schools, as Ebaugh has outlined,[2] but it is still far short of the need.

Secondly, it must be assumed that there is an essential basic need that all physicians should know how to treat minor psychiatric problems. It is not presumed that they should or could handle major psychiatric problems any more than they may be expected to do major surgery. Their practices and attitudes, however, indicate without question that many are not competent to handle the minor psychiatry in their own practice.

Future Planning.—It is our experience as the direct result of the war, and more specifically our experience in the Army, that the physician, particularly the general practitioner of medicine, must have a more practical knowledge of psychiatry than he has heretofore received. This can be accomplished only through changes in our system of medical education. These changes must affect not only the educational plan for the medical student but also postgraduate education. The facts overwhelmingly point to the necessity of placing psychiatry as a basic medical subject. By so doing, this would not eliminate specialists of the field, as there is an urgent need for many more specialists. On the other hand, the universality of emotions, of feelings, and their effect on the human body make it imperative that every individual practicing medicine be as firmly grounded in the field as he is in the other basic medical subjects.

For the benefit of the great number of physicians now in practice, there is little doubt that many of them would welcome an opportunity for a short orientation course in psychiatry as related to general medicine and surgery. The experience in the Army undoubtedly will add very greatly to the number of men who desire such an opportunity. At present, very few opportunities for such training are available. Furthermore, it is highly desirable that such courses deal with the emotional factors in the general medical and surgical patients and with little or no attention paid to the problems of major psychiatry, particularly the psychoses.

The undergraduate course in psychiatry should be entirely overhauled with considerable less emphasis on the psychotic illnesses and much more emphasis placed on those fields of medicine and surgery in which the symptoms of functional illness are most frequently encountered. Our teaching methods of the past have all too often led the students to assume that psychiatry was only a specialty and they graduated failing to recognize that the knowledge and technics of this field would and should apply in every patient.

As medicine becomes more of a social science and involves the assistance of research workers, of laymen assistants, of nurses and for us in the Army, our tremendously important Medical Administrative Corps, we must recognize that these individuals should have a much closer contact in medicine from an earlier period in education than they do. In psychiatry it is highly important, whether we practice in an outpatient clinic or in a hospital, that we have the help of the clinical psychologist and of the psychiatric social worker. It is to be hoped that sometime our medical schools can become sufficiently universities to include in their training these intimate associates and assistants of the physician.

Not only should the course in psychiatry be greatly changed, but the whole medical course might very

1 Kirk, N. T.: Bull. U. S. Army M. Dept., July 1944, No. 78, p. 40.

2. Ebaugh, Franklin G., and Rymer, Charles C.: Psychiatry and Medical Education, Commonwealth Fund, 1942.

advisably point to a reorientation of the importance of the personality factors in disease. In every medical course we start the student in devoting hours, weeks and months in the dissection of the human body. We follow it with excellent courses in the physiology and the chemistry of this body. We are commendably grounded in the physical pathology of this body. Nevertheless we suffer in our system of medical education by so much emphasis on the material that the average medical student receives his diploma with only the vaguest conception that the most important part of his patient is the person who lives within the framework of the body. He leaves with slight, if any, idea that it is our ambitions and our strivings, our loves and our hates, our successes and our failures, our aggressivity and our passivity, that are probably the major determinants in the maintenance of health. This cannot be taught only in the course on psychiatry, it must be taught in medicine and in surgery and in every specialized field.

Last, but not least, is the opportunity, the responsibility of medical education to provide the leadership in reorientation regarding concepts of mental health. No field of medicine battles against such a welter of superstitions and misconceptions regarding its patients and its methods as does psychiatry. Unfortunately, our greatest lack of understanding and most frequent source of misunderstanding lies in the medical profession itself. Again, it may be in our system of medical education; it may be in the historical evolution of psychiatry from the period of werewolves and dungeons; it may be in the incomprehensible jargon of some psychiatrists; it may be, in part, the intangible nature of the subject in contrast to operative technics, stethoscopes and x-rays; it may be of a presumed necessity to defend our individual and naive belief that each of us is a "normal" personality; whatever the causes, the fact remains that the physicians' bungling of psychologic factors keep thousands of cults thriving. Because he is the physician, and thus the authoritative source of opinion for the layman, his attitude and understanding of psychiatry can and do color the public attitude. Even though progress has been made, the public conception is still a blurred picture of disgrace and fear, mysticism and self exemption. Is it too much to hope that the medical profession might take a more forceful initiative to gain enlightenment and disseminate it? It is fundamentally a challenge to medical education.

PUBLIC HEALTH

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The field of public health, broadly considered, comprehends all health activities for which public responsibility has been assumed. Thus, it includes not only such traditional activities as sanitation and communicable disease control but also such functions as school health service, maternal and child health programs, medical care for the needy, care of the mentally ill and many services which are provided by other agencies, governmental or voluntary. Public action in the health field has been increasing at an accelerated rate in recent years, but medical education has by and large continued to prepare students for individual private practice with little regard for the changing scene. The greatest single problem now before our medical schools is to give their students new attitudes, information and technics which increasing public action will demand of them.

In general, expansion in public health is taking two forms: first, growth in the number and size of the health services conducted or supervised by governmental agencies and in which both clinical and administrative positions await trained medical personnel; and, second, increased tax support for services which are largely provided by private practitioners and hospitals. An example of the first is the care of sick or disabled veterans in the facilities of the Veterans Administration and of merchant seamen by the Public Health Service, a vast enlargement of which is occasioned by the war. In the second group fall the Emergency Maternity and Infant Care program for the wives and infants of servicemen and the physical restoration of the civilian handicapped under the Barden-LaFollette act. Often, as in the care of the needy and medically needy, a combination of directly operated public hospitals and of tax payments to private sources is found.

There are numerous other instances of both types of public activity, some initiated during the war, others old and well established but stimulated to further growth by the emergency. All, however, will affect the future pattern of our health services. Of the older public programs, none is more significant or more generally accepted than the development of state and local public health services. Of the 3,070 counties of the United States, only about 1,800 have some form of full time health service. The House of Delegates of the American Medical Association, in company with many other groups, urged in 1942 the establishment of full time public health services throughout the country. In the past session, June 1944, the House again emphasized the need for expanding these services and for training qualified personnel. Health departments may be faced with increased responsibilities if tropical diseases are introduced into this country in serious proportions by returning servicemen.

The federal-state venereal disease control program is another well established activity that has grown enormously with the war and with the advent of newer, more rapid methods of treatment. The venereal diseases may be virtually eradicated if the use of these new treatment methods is extended when peace comes. Governmental agencies have also long been active in industrial hygiene, workmen's compensation, dental hygiene, control of cancer and the care of crippled children. Industrial hygiene in particular has received emphasis in connection with war production, and more thought is being given to the desirability of greater public responsibility for treatment of industrial diseases in addition to the traditional responsibilities of research and prevention.

The experience of Selective Service and of the armed forces with psychoneurotic and other emotional disturbances furnishes a powerful impetus for advances in mental hygiene and psychiatric treatment. Already there is a vigorous voluntary movement for increasing research and training in this field, for enlarging the number and size and for improving the quality of our services and facilities for mental hygiene and psychiatry. There can be little doubt that important public action will follow.

The depression of the thirties brought virtually complete acceptance by the public and by the medical professions of governmental responsibility for the medical care of the needy and the medically needy. This function has venerable Anglo-Saxon tradition behind

it, but its systematic organization on a nationwide scale, with some (though limited) aid from federal funds, is quite different from the local "doctor to the poor" of the past. Much of the best of this work has been carried out by public welfare agencies, but these activities should nevertheless be included in any comprehensive definition of "public health."

Care for the inhabitants of rural areas is becoming recognized as a service which cannot be satisfactorily provided, in many instances, without government aid. The Farm Foundation, for example, has developed cooperative health and medical service in Nebraska, with state assistance. The nationwide efforts of the Farm Security Administration and the War Food Administration have attained notable success and have been marked by sustained cooperation from the practicing profession. Farm organizations have long indicated a desire to see such efforts enlarged in scope and amount.

Public responsibility, in addition to its older functions, has been accepted or is being seriously considered for a number of new activities. The most recent is the passage by Congress late in June of an act authorizing the appropriation annually of funds ($10,000,000 in 1945) to be used by the Public Health Service in the control of tuberculosis, including grants-in-aid to the states and other political subdivisions. Recently a committee of distinguished cardiologists recommended a similar federal-state program for the control of rheumatic fever. The revelation of large numbers of preventable and curative defects in Selective Service registrants may well result in widespread strengthening of our school health services and in increased public responsibility for the early correction of defects found in school children.

A growth of official or tax supported programs for the control and treatment of noncommunicable diseases of major importance may also be expected. The reduction of communicable disease and the aging of the population have resulted in an increased amount of chronic illness and dependency. Public action has already been taken in some areas toward improving and enlarging facilities for the treatment of patients with chronic conditions, but the problem is nationwide and will be dealt with on a far wider scale than heretofore. It seems likely too that the benefits of physical medicine will be made more widely available through public action if the studies of the Baruch Committee indicate the need.

Finally, there is a rapidly growing public interest in organized methods for prevention and treatment of sickness of all types and paying for its costs. Most efforts in this field have been under voluntary or private auspices, but they are by their very nature community, rather than individual, activities. Indeed, the city governments of San Francisco and New York have already taken active steps to secure organized services for their employees. Whether or not governmental participation increases in developing group medical practice and insurance against the costs of sickness, the vigorous support of labor, industry, agriculture and many medical and hospital groups assures important future developments.

This list of public activities in health is impressive, yet it is far from complete. These activities are increasing in both scope and number. Some require physicians in public office, more require the time and effort of private practitioners in providing services. The problem facing medical education is to train physicians for intelligent participation in public health activities. Up to now, doctors have been content to ignore these programs or to oppose them, or to consider the services they render under them as a kind of charity.

This is not only unrealistic, it is dangerous. Many public health programs fail to live up to the best in medicine because the best physicians fail to participate. The public demands expansion of these programs, nonetheless, and they will constitute an ever larger proportion of all medical work. If their standards are less than the best, they threaten all professional standards.

It is time that medical students learned the facts of life. They should be fully aware that public health, in the broadest sense, will occupy much of their time and effort, whatever they may choose to do. They should be stimulated to see these activities not as something to be avoided or as a threat to private practice but as an intrinsic and challenging part of their everyday work. They should realize that publicly sponsored health functions will demand and should be given the best of their skill and enthusiasm. Only if the new graduate comes out eager to join with the public in action for health can we hope for the kind of constructive action that will, for the future, guarantee high quality in medicine, professional and economic opportunity for physicians, and good health for the nation.

INDUSTRIAL HEALTH

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American Medical Association
AND
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Secretary, Council on Industrial Health

Wage earners are numerically and economically the most important single constitutent in our population. It follows that industrial health should be the most important element in the public health. The Council on Industrial Health believes that industry, regardless of size, should have certain health services available to it. These are defined as follows:

1. A competent physician who takes genuine interest in applying the principles of preventive medicine and hygiene to employed groups and who is willing to devote regular hours to such service in the working environment.

2. Industrial nurses with proper preparation, acting under the physician's immediate supervision or under standing orders developed by him or by the committee on industrial health of the county medical society.

3. Industrial hygiene service directed at improvement of working environment and control of all unhealthful exposures, to be provided by physicians and others with guidance and assistance from the specialized personnel in state and local bureaus of industrial hygiene.

4. A health program which should include:

(*a*) Prompt and dependable first aid, emergency and subsequent medical and surgical care for all industrially induced disability.

(*b*) Health conservation of employees through physical supervision and health education.

(*c*) Close correlation with family physicians and other community health agencies for early and proper management of nonoccupational sickness and injury.

(*d*) Good records of all causes of absence from work as a guide to the establishment of preventive measures.

Widespread application of these services, suitably adjusted to community medical and health facilities, would enhance the well-being of millions of workers

and contribute greatly to the productive capacity of the country.

If industrial health is to expand and improve according to this general pattern, support must be assured from several influential quarters. The war, by reason of its insatiable demands on industry and industrial manpower, has in fact enlarged our concept of the industrial physican's functions from practical necessity to limitless opportunity. There are signs that support will be continued and augmented in the postwar years from the following sources:

1. The government. Governmental interest is represented by an unbroken trend toward liberalized procedure, greater coverage and increased benefits under workmen's compensation and social security. Each year new sanitary, safety and health codes are developed for enforcement by federal, state and local agencies. Bureaus of industrial hygiene have steadily improved their facilities for investigation of working conditions and for consultation with management and physicians.

2. Management. The successful performance of existing industrial medical departments strongly suggests that an acceptable formula can be developed jointly by industry and medicine which will bring qualified physicians regularly and directly into the work place. Once agreed on, the value of the formula must be demonstrated to industry both small and large. To this educational service the trade associations and manufacturing and commercial groups are already committed. It is only under this kind of organization that individual physicians can bring to individual plants widespread application of the great store of clinical and technical information already available in sufficient quantity to make every occupation a safe and healthful one.

3. Labor. Industrial health is here to stay as a factor in collective bargaining. The appearance of health and safety clauses in employment contracts, its advocacy of health and hospital insurance coverage, participation in case finding surveys and willingness in certain areas to support its own industrial hygiene services are indications of labor's rapidly mounting interest.

4. Medicine. Initiative and guidance in this expanding field must be assumed by the medical profession if high standards of accomplishment and conduct are to prevail. Progress in this direction is being made. Nearly every sizable industrial community has a committee on industrial health in its medical society, all the members of which are prepared to cooperate with other community interests to improve industrial health. The specialty groups likewise are beginning to realize that help from them is essential if many unhealthful and unhygienic problems are to be solved, and that industry also offers unparalleled opportunities for clinical investigation and observation. These activities augment, of course, the services of individual physicians already employed full or part time in industry.

Educational Requirements.— These developments, representative of improved integration between medicine and other affected groups, must be accompanied by improved opportunities for training. It is still largely true, in spite of recent advances, that industrial medicine, hygiene and health administration are commonly taught without real insight into industry's and the workers' needs and their relation to medical and health facilities in the community at large. There is a tendency to resolve the whole problem of medical service in industry by regarding it as general practice in a plant. Most experienced industrial physicians would disagree. Industry's paramount need for the prevention of injury and disease with the resultant details of medical and engineering control over the worker and his environment are the factors which distinguish industrial health from conventional medical practice. Much as industrial health owes to every other medical discipline, its real future lies in the domain of preventive medicine and public health. It is in this direction that its essential characteristics as a recognized specialty are likely to occur.

The appointment of a committee representing the Council on Industrial Health and the Council on Medical Education and Hospitals is a step in the direction of orderly definition of the problem and its practical solution. A beginning has already been made.[1] It is hoped that through this means:

1. Every medical graduate will obtain reasonable grounding in the fundamentals of industrial medicine and surgery, industrial hygiene and toxicology, and industrial health administration.

2. Every encouragement will be given to promote introductory, refresher and continuation courses for practicing physicians under sponsorship of medical societies and medical schools.

3. The value of industrial experience during the internship can be investigated.

4. A program of graduate training can be evolved in conformity with existing standards for certification, using the residency and fellowship methods which characterize extended study in other clinical fields.

5. Coordinated training of physicians and engineers for industrial health service can be developed, preferably in schools of public health or institutes of industrial health.

6. Standards for the training and employment of technical assistants can be elaborated.

Medicine has much to offer industry. Its opportunities should not be hampered by lack of imagination or leadership.

PHYSICAL MEDICINE

The timely and informative report on physical medicine by Frank H. Krusen, M.D., Director, Baruch Committee on Physical Medicine, appears on pages 1093 to 1097 of this issue as an integral part of the Educational Number. It will be included in the reprint edition.

TROPICAL MEDICINE

Commander Lowell T. Coggeshall
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Since the onset of the present war there probably has been no phase of medical education which has expanded more than that of tropical diseases. In the years preceding Dec. 7, 1941 the teaching of tropical medicine was not one of major interest, although it was rapidly gaining in importance and recognition. Also little effort was being expended at that time to supply students with adequate knowledge or opportunities for investigation of tropical and parasitic diseases. There were a few fortunate medical schools with far sighted leaders who realized the necessity of developing this field, but in most places the burden was carried by the zoologist or the parasitologist or divided between many departments and attracted little interest except to those few, chiefly nonmedical, students who planned a career of teaching or research. By the time the medical student

1. The Teaching of Industrial Health, J. A. M. A. **118**:731 (Feb. 28) 1942.

graduated, he was far removed from the original stimulating teacher, and since there was an apparent lack of opportunity to continue studies on tropical diseases he usually became engrossed in some other specialty. It is not surprising therefore that there was a consistent shortage of trained men in tropical medicine at the beginning of the war.

As a result of the war the whole picture suddenly changed and a profound respect has been created for the role of the so-called "tropical disease," and it is a certainty that there will be a continuing need for specialists versed in tropical medicine long after the termination of the war. Thousands of military and civilian medical officers are seeing for the first time the devastating effects of diseases entirely new to them in our soldiers, as well as the crippling effects on groups of disease stunted populations living in some parts of the earth where abundant natural resources are undeveloped. In many of these medical men there has been generated a desire to learn more, so that they may effectively contribute to human welfare, and many have already experienced the gratification of seeing a disease or epidemic disappear from populations as a result of their efforts. Such experiences have convinced some of these officers, even those who have had highly specialized training in other fields, that there is a need for their services in an entirely new type of work, and in many instances this interest will not lag at the termination of the war. In addition to the older medical officers in the armed services there is a much larger group of recent graduates. They have had a concentrated medical education and a short nonspecialized internship, and their first experience with medical problems after departing from the protective atmosphere of their medical schools will be chiefly concerned with preventive medicine largely in tropical areas. In addition to those already in the services, there are 20,000 more in the medical schools and hospitals and they are entering the Army and Navy Medical Corps at the rate of 5,000 per year. These are the men that will profoundly influence if not control medical practice in the future, and tropical diseases will receive their full share of interest from them. Never before has such a large group of men, still in the receptive and impressionable stage, been exposed to the problems and opportunities that tropical diseases present, and after the war they will return and demand admission into schools for elementary and graduate study and seek opportunities for investigation. Finally there is the third group, who have had special training such as offered at the Army Medical School, Tulane University and other places designed to prepare them as teachers in the medical schools and in the services, and many of them have definitely planned a career in this field.

In view of this picture it is important now to plan for future graduate and postgraduate teaching facilities in tropical medicine. Should we have more schools, departments or some other arbitrarily defined units and, if so, how should they be organized? The answer to the first question is definitely in the affirmative, and it would seem wise not to be content with small subdepartments but plan for the ideal wherever possible, namely schools of tropical medicine. The English and German schools have proved to be satisfactory patterns and, like them, schools of tropical medicine in this country should be closely identified with, or a part of, schools of public health, as the activities of the two are complementary. In addition, each school should be supplied with beds where clinical material can be made available for instruction and investigative purposes. Naturally this will call for an outlay of financial resources not available to some institutions. The amount required will vary in different places, but in no instance will it be excessive, and never before have so many funds been available for the study of tropical diseases. There should be several such schools, and the locations of each should depend on the objective of the particular school. It would be best if each school did not try to duplicate the activities of the other. Some might well concentrate on the instructional phase, with special provisions for the increasing number of Latin American students. The splendid work now successfully under operation at Tulane University with its proximity to the other American republics is an example. Other schools in the larger population centers will undoubtedly have a wealth of clinical material brought in by air and sea, both civilian and military, for teaching and investigative purposes. In still others the prime function might be fundamental research, and for these any location with suitable research, library and laboratory facilities could be utilized. Geographic position would be of little importance for them, because the basic aspects of the desired problem could be investigated and the crucial investigations could be conducted in the area where the disease is most prevalent. The time required to reach these places is now inconsequential and after the war there will be ample travel accommodations for all. It will not be necessary to establish costly substations in these areas where expensive laboratory equipment, libraries and staff must be duplicated. Suitable places are now available in practically any area one might wish to go and their leaders already have issued sincere invitations to come, share their laboratories, study their problems and help teach their students. In turn, we must profit by extending to them the same invitation. And when we go it should not be a brief courtesy or inspection visit but we should go with a definite purpose in view and ample time to work. The time of barnstorming tours and semiscientific cruises has passed.

Other schools may wish to stress the epidemiologic aspects of disease on an international basis, a field barely touched. Study the disease in relation to all its environments. One trouble with the voluminous literature on malaria is that some know and refer to the disease in a heavily endemic area where there is a high community tolerance and where only minimal therapeutic assistance will terminate the acute attack, others see the manifestations in areas where the disease is at a low level with only infrequent exposure to infected mosquitoes, some are talking about the disease in a highly susceptible group of servicemen bitten by many infected mosquitoes daily and where excessive amounts of suppressive medication may fail to prevent the appearance of clinical symptoms, and still others see the disease in the patient with dementia paralytica or in experimental animals. In reality they are studying different diseases and fail frequently to agree on the fundamentals. Many other similar illustrations could be cited. The epidemiologic studies should evaluate the importance of the nutritional and occupational factors with their sociologic and economic relationships.

As stated, each school should make special efforts to preserve its identity and not to vie with one another to offer the greatest variety of courses. The student should be encouraged to go from one school to another according to his particular interests and abilities.

In addition to institutes or schools of tropical diseases that have long term objectives, there is the necessity of creating additional educational facilities for the civilian doctors now in private practice who are already encountering infections strange and new to them. Avoidable deaths have been reported within recent months of men returning with falciparum malaria. The private practitioner must be kept informed about the clinical and laboratory diagnosis of tropical diseases, the newer methods of treatment and prevention of spread. One means of keeping them informed is by simple articles in the medical press and notices to minor organizations as the county medical societies. Training centers should be provided for them in various sections at the medical schools or at the laboratories of the state boards of health, where these men can be invited to attend short practical sessions. Such a graduate study program, if properly instituted, would not lose its value at the termination of the war when the medical officers who have had experience with the tropical diseases return to private practice because they will also utilize this means of keeping informed as well as serve as a stimulus to their associates.

Each school should have a bureau where trained men are available for consulting services and are in constant readiness to respond to any invitation for advice concerning diagnosis, treatment and control measures that are bound to arise in many communities where the service men are discharged. This arrangement will serve as a valuable means of keeping in contact with the problem and will supply a large volume of teaching material. In connection with the consulting bureau it may be possible to establish a tropical disease registry where the numbers of many or most of the cases may be collected, tabulated and studied. Undoubtedly many service men will be sent to various veterans' hospitals, where they will be retained until it is safe to release them. Some such means of caring for the infected soldiers will have to be instituted, and this group will also add to the material available for clinical investigation and teaching.

In summary, it should be stated that in all probability the medical profession will be called on to extend the facilities for the study of tropical medicine whether it is the desire of all concerned or not. Those desiring further education in this field will come from a portion of the large reservoir of young medical officers now in service. It is to be expected that only a small fraction of the total will retain this interest in the postwar period, but even so a very substantial increase in numbers when compared to the prewar level will result. Furthermore, these men will represent the type of individual that should be welcomed, aided and encouraged because of the interest and knowledge gained during their so-called field internship. It will be necessary to provide for these men educational facilities at fundamental and postgraduate levels, and in most instances a place for original studies.

Whether the diseases that are brought back can spread or not is not a question that can be definitely answered now, but even if it is later found that they have not, our field of interest will not diminish because we shall be operating on a worldwide basis. Although it may seem that in the future we may have many new responsibilities, actually they should be looked on as opportunities. It is now a certainty that the medical profession must be prepared to assume the teaching obligations in tropical medicine that will place this country on a much higher plane, which it rightfully deserves.

FORTY-FOURTH ANNUAL REPORT ON MEDICAL EDUCATION IN THE UNITED STATES AND CANADA BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

Victor Johnson, M.D., Secretary

In this annual compilation of information on medical education in the United States and Canada are included the latest developments in the Army, Navy and Selective Service programs and policies, also an account of the military status of students, the probable reduced supply of medical students, the changing status of the accelerated program and its effect on medical education.

In addition the calendars of the medical schools and data on enrolments, graduates, premedical education, licensure, internships, fees, continuation courses and specialty boards are supplied. Medical schools are described and recent educational developments discussed.

Restrictions in the use of paper again prevent the incorporation of the internship, residency and fellowship lists. These will be available separately in reprint form and will also be included in the reprint edition of the Educational Number, which is widely distributed.

The Educational Number of THE JOURNAL provides essential material of great value to military and government agencies, the medical profession, medical educators, hospital officials, students, interns, residents and those concerned with specialty certification and graduate and postgraduate medical education.

The Council and THE JOURNAL express thanks and appreciation to the military officials, the officers of the institutions mentioned and others for their cordial cooperation in supplying the material submitted in this presentation and for other records furnished throughout the year to the office of the Council and the members of its staff on inspection or visitation, enabling the Council to maintain its medical student and hospital registers efficiently and to carry on its activities as outlined by the House of Delegates of the American Medical Association and to serve the profession.

THE SUPPLY OF INCOMING MEDICAL STUDENTS

In January 1944 it seemed that civilian and military needs for doctors might be met reasonably satisfactorily by the arrangements in which 55 per cent of the capacity of each entering class would be utilized for the training of enlisted men under the A. S. T. Program, 25 per cent for the training of seamen under the Navy V-12 Program, and the remaining 20 per cent for civilians. These proportions have since undergone considerable change.

TABLE 1.—*Admission and Graduation Calendars of Medical Schools in the United States*

School	Session for Which Data Are Given in This Educational Number: Freshman Session Began (1943)	Date of Graduation	"Present" Freshman Session Began	Dates of Next Two Entering Classes		Dates of Next Two Graduating Classes	
ARKANSAS							
University of Arkansas School of Medicine	7- 5-43	3-27-44	4- 3-44	1- 2-45	10- 1-45	12-18-44	9-24-45
CALIFORNIA							
University of California Medical School	2-15-43	10-23-43	11- 1-43	6-30-44	3- 1-45[1a]	10-21-44	6-4-45
College of Medical Evangelists	7- 1-45	1- 2-44	3-31-44	12-29-44	10- 7-45	6- 1-44	7- 1-45
University of Southern California School of Medicine	7- 5-43	7- 1-43	3- 6-44	10-30-44	7- 2-45[1b]	9-17-44	6-4-45
Stanford University School of Medicine	6-17-43	1-14-44	4-10-44	1- 8-45	9-45	10-13-44	7- 8-45
COLORADO							
University of Colorado School of Medicine	3-29-43	12-21-43	1- 3-44	10- 2-44	7- 1-45	9-19-44	6-26-45
CONNECTICUT							
Yale University School of Medicine	4- 5-43	12-18-43	12-27-43	9-25-44	6-25-45	9-16-44	6-16-45
DISTRICT OF COLUMBIA							
Georgetown University School of Medicine	3-15-43	12-19-43	1- 3-44	10- 9-44	7- 6-45[1b]	9-16-44	6-24-45
George Washington University School of Medicine	3- 1-43	11-17-43	11-22-43	9-18-44	6-45[1b]	9-19-44	6-4-45
Howard University College of Medicine	6-12-43	3-17-44	3-25-44	12-28-44	9-45	12-22-44	9- 7-45
GEORGIA							
Emory University School of Medicine	3-23-43	12-20-43	1- 3-44	10- 2-44	7- 2-45[1c]	9-16-44	6-4-45
University of Georgia School of Medicine	4- 7-43	12-20-43	1- 3-44	9-27-44	7- 2-45	9-11-44	6-11-45
ILLINOIS							
Loyola University School of Medicine	4-19-43	12-18-43	1-10-44	10- 2-44	7-45[1b]	9-23-44	6-23-45
Northwestern University Medical School	3-29-43	12-18-43[2]	12-28-43	9-27-44	9-45	9-44[3]	6-4-45
University of Chicago, The School of Medicine	3-29-43	12-17-43[4]	1- 3-44	9-25-44	6-20-45	9- 8-44[3]	6-4-45
University of Illinois College of Medicine	6-28-43	12-17-43	4- 3-44	1- 2-45	10- 1-45	12-15-44	9-14-45
INDIANA							
Indiana University School of Medicine	1- 7-43	8-22-43	5- 1-44[4]	1- 1-45	9- 4-45	12-23-44	8-4-45
IOWA							
State University of Iowa College of Medicine	3- 1-43	12-22-43	1- 3-44	10- 2-44	9- 4-45	9-23-44	6-16-45
KANSAS							
University of Kansas School of Medicine	5-24-43	1-31-44	3- 6-44	10-30-44	9-20-45[1d]	10-30-44	8-15-45
KENTUCKY							
University of Louisville School of Medicine	4- 1-43	12-20-43	1- 5-44	9-27-44	7- 5-45	9- 8-44	6-15-45
LOUISIANA							
Louisiana State University School of Medicine	3-11-43	12-20-43	1-11-44	9-27-44	9-13-45	9- 6-44	6-13-45
Tulane University of Louisiana School of Medicine	7- 1-43	3-12-44	3- 1-44	12- 1-44	9- 1-45	10-14-44	8-15-45
MARYLAND							
Johns Hopkins University School of Medicine	3- 1-43	11-25-43	11-29-43	9-25-44	9-14-45	8-18-44	6-14-45
University of Maryland School of Medicine	4- 8-43	12-23-43	1-13-44	10-17-44	7-24-45[1b]	9-29-44	6-22-45
MASSACHUSETTS							
Boston University School of Medicine	3-31-43	12-23-43	12-31-43	9-29-44	6-29-45[1b]	9-22-44	6-22-45
Harvard Medical School	3- 8-43	12-20-43	1- 3-44	10- 2-44	7- 9-45[1b]	9-25-44	6-25-45
Tufts College Medical School	4- 7-43	12-30-43	1- 5-44	10- 2-44	6-45[1d]	9-44	6-4-45
MICHIGAN							
University of Michigan Medical School	11- 1-43	10-16-43	11- 1-43	10-30-44	10-29-45	7-29-44	9- 1-45
Wayne University College of Medicine	4- 5-43	12- 9-43	1- 3-44	10- 2-44	7- 2-45	9-28-44	6-28-45
MINNESOTA							
University of Minnesota Medical School	3-29-43	12-16-43	1- 4-44	10- 2-44	6-45	8-26-44	6-4-45
MISSOURI							
St. Louis University School of Medicine	2-23-43	11-19-43	11-22-43	8-28-44	5-45[1b]	9-21-44	6-15-45
Washington University School of Medicine	3-29-43	12-12-43	1- 3-44	10- 5-44	10-45[1d]	9-12-44	6-23-45
NEBRASKA							
Creighton University School of Medicine	3-18-43	12-20-43	1- 4-44	9-28-44	7- 6-45[1b]	9-22-44	6-4-45
University of Nebraska College of Medicine	3-26-43	12-18-43	1- 3-44	10- 2-44	6-25-45	9-23-44	6-16-45
NEW YORK							
Albany Medical College	3-29-43	12-23-43	1- 3-44	10- 2-44	7- 2-45	9-23-44	6-19-45
Long Island College of Medicine	3-29-43	12-30-43	1- 3-44	10- 2-44	10- 1-45	9-28-44	6-28-45
University of Buffalo School of Medicine	7- 6-43	12-30-43	4- 3-44	1- 2-45	9-45	9-44	6-4-45
Columbia University College of Physicians and Surgeons	3-22-43	12-23-43	1- 3-44	10- 5-44	10- 4-45	9-28-44	6-4-45
Cornell University Medical College	4- 5-43	12-23-43	1- 3-44	9-28-44	10- 1-45	9-26-44	6-26-45
New York Medical College	3-29-43	12-20-43	1- 3-44	10- 2-44	7- 1-45	9-28-44	6-12-45
New York University College of Medicine	4- 5-43	12-20-43	1- 3-44	10- 2-44	7- 2-45[1c]	9-28-44	6-27-45
University of Rochester School of Medicine	3-29-43	12-18-43	1- 3-44	10- 2-44	10- 1-45	9-23-44	6-16-45
Syracuse University College of Medicine	7- 6-43	12-21-43	4- 1-44	1-45	10-45	9-44	6-4-45
NORTH CAROLINA							
Duke University School of Medicine	4- 1-43	12-20-43	1- 3-44	10- 2-44	7- 2-45[1c]	9-23-44[3]	6-23-45
Bowman Gray School of Medicine	3-22-43	12-20-43	1- 3-44	9-27-44	9-26-45	9-25-44	6-19-45
OHIO							
University of Cincinnati College of Medicine	3-22-43	12- 2-43	12-13-43	9- 5-44	6- 4-45	8-25-44	6- 8-45
Western Reserve University School of Medicine	3- 1-43	10-28-43	11-22-43	8-28-44	6-25-45	9-25-44	6-22-45
Ohio State University College of Medicine	3-30-43	12-13-43	1- 4-44	10- 3-44	6-45[1c]	9- 1-44	6-11-45
OKLAHOMA							
University of Oklahoma School of Medicine	5-10-43	12-23-43	1- 5-44	9-25-44	6-29-45	9-15-44	6-15-45
OREGON							
University of Oregon Medical School	3-29-43	12-22-43	1- 3-44	10- 2-44	7- 2-45	9-21-44	6-22-45
PENNSYLVANIA							
Hahnemann Medical College and Hospital	4- 5-43	12-23-43	1- 3-44	10- 2-44	10- 1-45	9-14-44	6-4-45
Jefferson Medical College of Philadelphia	4-12-43	1- 6-44	1-10-44	10- 9-44	7-16-45	9-25-44	6-2-45
Temple University School of Medicine	4- 1-43	12-10-43	1- 3-44	10- 2-44	7- 2-45	9-14-44	6-14-45
University of Pennsylvania School of Medicine	4- 5-43	12-22-43	1- 3-44	10- 2-44	7-45[1b]	9-23-44	6-4-45
Woman's Medical College of Pennsylvania	9- 1-43	3-16-44	9- 1-43	9- 2-44	9- 1-45	3-16-44	1-10-45
University of Pittsburgh School of Medicine	4- 5-43	12-20-43	1- 3-44	10- 2-44	7- 2-45[1d]	9-29-44	6-4-45
SOUTH CAROLINA							
Medical College of the State of South Carolina	3-29-43	12-22-43	1- 3-44	10- 2-44	9-27-45	9-16-44	6-15-45
TENNESSEE							
University of Tennessee College of Medicine	7- 5-43	12-13-43[2]	5-20-44	5	5	9-18-44[3]	6-16-45
Meharry Medical College	6-14-43	3-19-44	3-28-44	12-27-44	9-24-45	9-17-44	9-4-45
Vanderbilt University School of Medicine	3-26-43	12-16-43	12-27-43	9-25-44	6-4-45	9-11-44	6-4-45
TEXAS							
Southwestern Medical College	6-21-43	3-20-44	4- 3-44	1- 2-45	10- 1-45	12-18-44	9-17-45
Baylor University College of Medicine	7-12-43	3-15-44	3-27-44	11-20-44	9- 3-45	11-13-44	7-31-45
University of Texas School of Medicine	3-15-43	7-31-43	6-28-44	9-45	9-46	6-24-44	6- 2-45
UTAH							
University of Utah School of Medicine	3-22-43	.....	12-13-43	9-11-44	6-45[1b]	9- 6-44	6-4-45
VERMONT							
University of Vermont College of Medicine	4-12-43	12-21-43	1- 3-44	9-25-44	6-45[1d]	9-13-44	6-18-45
VIRGINIA							
University of Virginia Department of Medicine	3-26-43	12-13-43	12-29-43	9-29-44	7- 6-45	9-14-44	6-18-45
Medical College of Virginia	4- 5-43	12-18-43	12-30-43	10- 4-44	7-45[1e]	9-25-44	6-16-45
WISCONSIN							
University of Wisconsin Medical School	7- 1-43	11-20-43	4- 1-44	1- 1-45	9-22-45	9-23-44	6-30-45
Marquette University School of Medicine	3- 1-43	10-18-43	11- 1-43	7-29-44	5- 7-45	9-27-44	7-4-45

1. Admission date may be changed (a) to Nov. 1, 1945; (b) to September 1945; (c) to October 1945; (d) indefinite; (e) tentative.
2. Also September 1943 and March 1944. 3. Also December 1944 and March 1945. 4. Also June 1943 and September 1943. March, June, September and December 1944 and 1945.

In February the Army curtailed the A. S. T. P. and has since renegotiated its contracts with medical schools to provide 28 per cent instead of 55 per cent of 1945 entering classes.

This increases to 47 per cent the numbers which must be obtained from civilian sources.

In April the Selective Service system abolished further occupational deferments of premedical and medical students not enrolled in medical schools by July 1, 1944. To meet this deadline fifty-six medical and basic science schools admitted a total of 1,675 civilian students to the freshman class somewhat earlier than the normal admission date.

Only nine schools thought they might be able to fill 47 per cent of their freshman places from civilian sources with no Selective Service deferments. Fifty-seven schools estimated reductions of from 10 to over 40 per cent in freshmen enrolments. There was an average reduction of 23 per cent for the sixty-six schools venturing estimates. The remaining schools were unwilling or unable to estimate the reduction that will occur.

"2. Those who do not have a letter of acceptance to an accredited medical school, for entrance by Dec. 31, 1944. These men will be continued on active duty, and will not be eligible for ASTP medical training."

There will be no further new assignments to the premedical A. S. T. program. As a result medical schools will have to select 75 per cent of their 1946 freshmen from civilians. This is manifestly impossible, and it is probable that entering classes in 1946 will be approximately half filled unless the Enlisted Reserve Corps are reinstituted or Selective Service regulations changed.

No change is contemplated in the Navy V-12 premedical or medical programs, except that the Navy's quota of medical students may be increased from 25 per cent to 31 per cent.

Should no adjustment be made to correct the present situation, a considerable reduction of graduates after the war will ensue. Although schools will continue the accelerated program, they will probably admit classes only once annually instead of every nine months. This of itself will reduce the number of graduates from the present annual average of 7,000 to 5,000. If classes can be only half filled, this number will be reduced to 2,500 graduates per year. Since 3,300 to 3,500 physicians die each year, there will result an annual and cumulative deficit of 1,000 doctors a year.

Still further reductions in graduates and permanent damage to the "plant" of medical education will result from some schools being forced to close their doors

TABLE 2.—*Admission and Graduation Calendars of Medical Schools in Canada*

School	Session for Which Data Are Given in This Educational Number: Freshman Session Began (1943)	Date of Graduation	"Present" Freshman Session Began	Dates of Next Two Entering Classes		Dates of Next Two Graduating Classes	
CANADA							
University of Alberta Faculty of Medicine	9-27-43	9- 4-43	9-27-43	9-28-44	9-45	1-45	9-45
University of Manitoba Faculty of Medicine	8-21-43	5-12-44	8-21-43	9-11-44	9-45	5-17-45	5-46
Dalhousie University Faculty of Medicine	9-14-43	8-21-43	9-14-43	9-44	9-45	5-15-45	5-46
Queen's University Faculty of Medicine	9-27-43	7-28-43	9-27-43	9-25-44	9-24-45	2-45	11-45
University of Western Ontario Medical School	9-20-43	7-22-43	9-20-43	9- 5-44	9-45	5-45	5-46
University of Toronto Faculty of Medicine	9-28-43	7-30-43	9-28-43	9-26-44	9-25-45	2-45	10-45
McGill University Faculty of Medicine	9- 8-43	12-10-43	9- 8-43	9- 6-44	9- 5-45	7-31-45	7-46
University of Montreal Faculty of Medicine	9- 7-43	11-30-43	9- 7-43	9-18-44	9-45	5-31-45	5-46
Laval University Faculty of Medicine	9-15-43	9- 5-43	9-15-43	9-12-44	9- 7-45	8-44	6-45
University of Saskatchewan School of Medical Sciences	10- 5-43	.....	10- 5-43	10- 4-44	9-28-45	.....	...

A final development has still further jeopardized medical education. The Army appropriation bill for the coming year, which was passed by Congress June 23, contains a provision which reads in part as follows:

> Provided, That no appropriation contained in this Act shall be available for any expense incident to education of persons in medicine (including veterinary) or dentistry if any expense on account of this education in such subjects was not being defrayed out of appropriations for the military establishment for the fiscal year 1944 prior to June 7, 1944. . . .

A release from the War Department dated Aug. 1, 1944 states the following regarding this provision:

"Those individuals now on active duty whose medical or premedical educational expenses were defrayed in whole or in part by the government under the ASTP program prior to June 7, 1944, will be continued in the medical program of the ASTP. Those on active duty whose medical or premedical training was *not* defrayed either in whole or in part under the ASTP program prior to June 7, 1944, and who for that reason cannot be continued in the training program, fall into two classes who will be disposed of as follows:

"1. Those who have letters of acceptance and who would have entered an accredited medical school by Dec. 31, 1944. An individual in this group may elect to be discharged from the Army shortly before the entrance date of the class for which he was accepted; or to be assigned to the Medical Department with no further ASTP medical training.

TABLE 3.—*Admission Calendars of Schools of the Basic Medical Sciences in the United States*

School	Session for Which Data Are Given in This Educational Number: Freshman Session Began (1943)	"Present" Freshman Session Began	Dates of Next Two Entering Classes for Freshmen	
University of Alabama School of Medicine	3-11-43	12- 6-43	9- 4-44	6- 4-45[b]
University of Mississippi School of Medicine	2- 1-43	5-31-44	1-29-45	9-26-45
University of Missouri School of Medicine	3-22-43	12-27-43	9-16-44	6-23-45
Dartmouth Medical School	2- 7-43	10-31-43	7- 1-44	3- 1-45
University of North Carolina School of Medicine	3-22-43	12- 8-43	9-18-44	6-45[b]
University of North Dakota School of Medicine	6-14-43	3-27-44	1- 2-44	9-24-45
University of South Dakota School of Medicine	3- 8-43	12-13-43	9-11-44	6-11-45
West Virginia University School of Medicine	3-22-43	12-27-43	9-25-44	6-25-45[b]

1. Admission date may be changed (a) to September 1945; (b) indefinite.

because of drastically curtailed enrolments. An unknown number of war casualties among medical officers will also reduce the supply of physicians.

These reductions in medical graduates will occur in the face of new and increased demands for medical services, mainly from the civilian population, the standing army and navy, the Veterans Administration and the liberated countries of Europe.

MEDICAL SCHOOL CALENDARS

In past years practically all schools admitted a class each fall and graduated a class each spring, with one academic session per calendar year. Educational data could be presented annually without confusion arising as to which class was being discussed. Local conditions varied and schools commenced the accelerated program at different times, so that admission and graduation dates now occur throughout the year, as shown in tables 1, 2 and 3. Even within a given school the various classes may have different dates for the commencement and the ending of the academic year. It becomes necessary to define clearly which session is being presented in the Educational Number. On Aug. 14, 1943 most of the data presented applied to the "session preceding the first class entering in 1943." Most of the data in the current issue will apply to the succeeding session, "the first session commencing in 1943." Some information will also be presented for the next succeeding session, which happens in each school to include the month of May 1944 and in most schools runs from approximately January 1944 to September 1944. We may refer to this as the "present session" for convenience. However, the term is not strictly correct because in some schools this session has already been completed.

THE MILITARY STATUS OF MEDICAL STUDENTS

Table 4 shows the distribution of medical students in all four classes in the United States in the categories of Army students, Navy students and others.

The figures given are for the "present" academic session, which for most schools runs from January 1944 to September 1944. Of the 23,782 medical students 20,990, or 88.3 per cent, are in Army and Navy programs. Except for 581 students in the Army reserves and 81 students in Naval reserves, all the "Army" students are in the A. S. T. P. and the "Navy" students in the V-12 program on active duty assigned to medical studies. There are no Army students in one school, and no Navy students in three schools.

For the same academic session, table 5 gives the military status of medical students in the United States by classes. In all classes 62.1 per cent were Army students, 26.2 per cent Navy, 6.6 per cent other men, mainly physically disqualified or deferred by Selective Service, and 5.1 per cent women. The composition of the freshman class was significantly different from that of the upper classes and medical students as a whole, with 47.2 per cent Army students, 35.3 per cent Navy students, 11.8 per cent other men and 5.7 per cent women.

Military restrictions and demands on Army students appear not to be excessive in most instances, but these are generally greater than on Navy students. Navy students are required to do little other than accomplish their major assignment to become competent physicians.

THE ACCELERATED PROGRAM

All medical and basic science schools in the United States are on the accelerated program with the exception of the Woman's Medical College of Pennsylvania, which is on the accelerated program for the junior and senior years only. The accelerated program must

TABLE 4.—*Military Status of Medical Students in the United States, by Schools, May 1944*

Name of School	Army	Navy	Others	Totals
University of **Alabama**	48	52	10	110
University of **Arkansas**	144	73	58	275
University of **California**	143	76	71	290
College of Medical Evangelists	238	23	96	357
University of Southern California	170	62	16	248
Stanford University	99	103	40	242
University of **Colorado**	144	51	35	230
Yale University **(Connecticut)**	132	74	29	235
Georgetown Univ. **(Dist. of Columbia)**	212	108	23	343
George Washington University	165	93	51	309
Howard University	217	0	54	271
Emory University **(Georgia)**	153	95	3	251
University of Georgia	185	67	26	278
Loyola University **(Illinois)**	171	86	60	317
Northwestern University	360	162	53	575
Univ. of Chicago, The School of Medicine	134	89	26	249
University of Illinois	405	168	107	680
Indiana University	323	79	35	437
State University of **Iowa**	199	85	30	314
University of **Kansas**	202	96	24	322
University of Louisville **(Kentucky)**	259	85	14	358
Louisiana State University	218	91	37	346
Tulane University of Louisiana	272	205	59	536
Johns Hopkins University **(Maryland)**	176	86	48	310
University of Maryland	258	88	32	378
Boston University **(Massachusetts)**	174	55	22	251
Harvard Medical School	322	188	19	529
Tufts College Medical School	230	156	28	414
University of **Michigan**	206	125	85	416
Wayne University	174	68	37	279
University of **Minnesota**	307	135	51	493
University of **Mississippi**	31	29	5	65
University of **Missouri**	40	24	4	68
St. Louis University	356	121	27	504
Washington University	229	96	47	372
Creighton University **(Nebraska)**	169	72	14	255
University of Nebraska	217	81	24	322
Dartmouth Med. School **(New Hampshire)**	15	29	2	46
Albany Medical College **(New York)**	97	49	29	175
Long Island College of Medicine	293	95	30	420
University of Buffalo	219	39	54	312
Columbia University	288	145	39	472
Cornell University	207	90	20	317
New York Medical College	241	106	65	412
New York University	366	103	47	516
University of Rochester	135	92	35	262
Syracuse University	122	53	25	200
University of **North Carolina**	35	55	7	97
Duke University	155	126	21	302
Bowman Gray School of Medicine	113	54	13	179
University of **North Dakota**	33	7	11	51
University of Cincinnati **(Ohio)**	215	63	44	322
Western Reserve University	254	57	18	329
Ohio State University	229	42	27	298
University of **Oklahoma**	179	71	26	276
University of **Oregon**	209	53	23	285
Hahnemann Med. Coll. **(Pennsylvania)**	356	108	66	530
Jefferson Medical College	428	145	17	590
Temple University	287	141	47	475
University of Pennsylvania	330	144	45	519
Woman's Medical College	0	0	143	143
University of Pittsburgh	229	60	33	322
Medical College of **South Carolina**	129	54	7	190
University of **South Dakota**	21	14	12	47
University of **Tennessee**	378	94	145	617
Meharry Medical College	231	0	21	252
Vanderbilt University	149	43	13	205
Southwestern Medical College **(Texas)**	119	34	49	202
Baylor University	83	76	34	193
University of Texas	198	141	52	391
University of **Utah**	103	36	26	165
University of **Vermont**	120	12	12	144
University of **Virginia**	154	99	24	277
Medical College of Virginia	178	130	26	334
West Virginia University	38	12	9	59
University of **Wisconsin**	133	87	58	278
Marquette University	210	122	17	349
Totals	14,762	6,228	2,792	23,782

necessarily continue for all schools except the Woman's Medical College, because they have Army and/or Navy contracts calling for acceleration. Whether or not acceleration will be continued after the war will depend on varying local conditions and on the experience of each school with the accelerated program. It is now almost impossible to evaluate the educational

effects of the accelerated program because of other important complicating variables, chief of which are the reduction in teaching staff, the many uncertainties in the minds of students and the admission of students every nine months, compelling depleted staffs to function almost continuously.

The accelerated program does not necessarily involve admissions every nine months. It can be conducted with annual admissions, as has been the case at the University of Michigan and the Woman's Medical College. Acceleration with annual admissions requires the admission of only the peacetime annual number of freshmen and produces only the prewar number of annual graduates. This plan also reduces the teaching load of the staff. If a school is on the quarter system, accelerating and admitting a new class every October, there will be no freshmen in school during the summer quarter, no sophomores in the spring, no juniors in the winter and no seniors in the autumn. It follows that a faculty member who teaches only freshmen will have no teaching duties in the summer. One who teaches only sophomores will be free from teaching in the spring, and so on. It would be highly desirable to continue the experiment of medical school acceleration under these somewhat more favorable conditions.

Many schools plan to return to annual admissions while still accelerating, commencing in the autumn of 1945. By that time a three year, four session cycle will have been completed, with the production of one extra class of graduates. The probable future shortage of qualified applicants has also influenced this contemplated change. Forty-five schools plan to return to annual admissions in 1945. Twenty-four schools are as yet uncertain of their plans; probably an appreciable number of these will also decide to change. Of the remaining eight schools, five now plan not to change, two have always had annual admissions and one will continue to admit classes quarterly.

In all Canadian schools acceleration has been discontinued. In most schools, this change became effective with the class entering in the autumn of 1943. Only upper classes, already embarked upon the program at that time, are continuing to accelerate. The reasons given for the return to the decelerated program are: 1, further additions to and replacements in the services will be adequately met under the new plan; 2, the 37 per cent depletion of the teaching staffs makes a continuation of acceleration difficult; 3, there was evidence of some deterioration of educational standards; and 4, there was evidence of deleterious effects on the health of students.

Seniors who commenced the accelerated program in July 1942 graduated in March 1943 and completed their nine month internship in December 1943. Several hundred of these are now in the armed forces. Without acceleration and the reduced internship they would not have become available for active military duty until July 1944.

Most schools graduated two classes during the calendar year 1943, about March and December. The former of these classes was reported on in the 1943 Educational Number. The current issue gives data (see "graduates," page 1119) on the latter class. Data on two additional classes will be available for the 1945 Educational Number. By that time four classes will have been graduated in three calendar years.

Between July 1, 1942, when acceleration started in most schools, and June 30, 1944 there were 10,357 medical graduates (see also table 14). Estimates of graduates in the ensuing eighteen months are shown in table 6. From July 1, 1944 to June 30, 1945 there will be approximately 9,844 graduates. The total graduates for the four session three year cycle is estimated at 20,201. This rate of production of physicians exceeds that at any previous times.

In table 7 are listed the estimated numbers of graduates from each medical school, by months, from July 1, 1944 to Dec. 31, 1945. This table will be particularly valuable to internship hospitals by providing information on the numbers of graduates from the various schools and the times they will become available for internships.

TABLE 5.—*Military Status of Medical Students in the United States, by Classes, May 1944*

	Army	Navy	Other Men	Women	Total
Freshmen	3,083	2,305	780	370	6,538
Sophomores	3,924	1,296	283	275	5,778
Juniors	4,012	1,347	232	284	5,875
Seniors	3,743	1,280	275	293	5,591
Totals	14,762	6,228	1,570	1,222	23,782

TABLE 6.—*Distribution of Admission Dates by Schools and Estimated Number of Graduates for the Months July 1944 Through December 1945 in the United States; Schools of the Basic Medical Sciences Are Not Included*

	Number of New Freshmen Classes Entering	Number of Graduates (Estimated)
1944		
July	1	113
August	2	291
September	19	3,914
October	31	343
November	1	15
December	4	572
1945		
January	8	29
February	0	0
March	1	45
April	0	0
May	2	0
June	11	4,522
July	21	272
August	0	317
September	16	508
October	12	0
November	1	0
December	0	41
Total		11,072

PREMEDICAL EDUCATION

The premedical Army Specialized Training and Navy V-12 programs meet the minimum admission requirements of all schools, in the cases of army and navy students assigned to medical schools. These programs also meet the minimum requirements for admission to an approved medical school as formulated by the Council on Medical Education and Hospitals.

Most schools desire also to publish admission requirements in terms of academic years or semester hours for civilian applicants. In tables 9 and 10 (pages 1116, 1117 and 1118) are given the civilian premedical requirements for each medical school in the United States and Canada. In 1945, 4 schools will require a degree or four years, 30 will require three years, 5 require two to three years, 45 only two years and (3) (Canadian) schools will admit students with one year of premedical work. As compared with the current year, in 1945 there will be 7 more schools requiring three years of premedical work, and 7 less that will accept two years or two to three years.

Deans have now had experience with selections of students for the A. S. T. and V-12 programs and are in a position to estimate the quality of medical students who will enter the study of medicine under these programs. Deans tend to be somewhat pessimistic. About one third (26) of the 72 deans expressing an opinion think that the quality of freshmen will be poorer than very few or none of the entering freshmen would have been unable to obtain their premedical training without army and navy financial support. Thirty deans thought that 5 to 55 per cent of army and navy premedical students would have been unable to go to college as civilians paying their own way. The average for the thirty estimates was 21 per cent.

TABLE 7.—*Estimated Number of Graduates of Medical Schools, July 1944 to December 1945*

	1944						1945											
	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
University of Arkansas, Little Rock	..	..	..	..	..	64	..	..	..	..	..	..	..	..	65	..	..	..
College of Medical Evangelists, Los Angeles	..	..	11	..	..	2	..	..	..	..	..	..	93	..	..	..	..	..
Stanford University, Stanford University	..	..	..	69	..	..	..	..	..	..	..	..	29	..	..	..	..	..
University of California, San Francisco	..	..	..	62	..	..	..	..	..	..	..	..	..	..	..	..	..	..
University of Southern California, Los Angeles	..	..	55	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
University of Colorado, Denver	..	..	57	..	..	..	..	..	..	..	..	..	56	..	..	..	..	..
Yale University, New Haven, Conn.	..	..	44	..	..	..	..	..	..	..	..	..	46	..	..	..	..	..
George Washington University, Washington, D. C.	..	..	75	..	..	..	..	..	..	..	..	..	75	..	..	..	..	..
Georgetown University, Washington, D. C.	..	..	65	..	..	..	..	..	..	..	..	..	88	..	..	..	..	..
Howard University, Washington, D. C.	..	..	..	..	..	70	..	..	..	..	..	..	..	..	..	58	..	..
Emory University, Atlanta, Ga.	..	..	60	..	..	..	..	..	..	..	..	..	56	..	..	..	..	..
University of Georgia, Augusta	..	..	63	..	..	..	..	..	..	..	..	..	68	..	..	..	..	..
Loyola University, Chicago	..	..	77	..	..	..	..	..	..	..	..	..	77	..	..	..	..	..
Northwestern University, Chicago	..	..	124	..	..	16	..	..	10	..	..	..	120	..	10	..	..	10
University of Chicago School of Medicine	..	..	54	..	..	6	..	..	5	..	..	..	45	..	5	..	..	5
University of Illinois, Chicago	..	..	..	..	..	167	..	..	..	..	..	..	..	..	180	..	..	..
Indiana University, Indianapolis	..	..	..	..	..	111	..	..	..	..	..	..	..	100	..	..	..	..
State University of Iowa, Iowa City	..	..	72	..	..	..	..	..	..	..	..	..	83	..	..	..	..	..
University of Kansas, Kansas City	..	..	..	86	..	..	..	..	..	..	..	..	..	80	..	..	..	..
University of Louisville, Louisville, Ky.	..	..	90	..	..	..	..	..	..	..	..	..	88	..	..	..	..	..
Louisiana State University, New Orleans	..	..	79	..	..	..	..	..	..	..	..	..	81	..	..	..	..	..
Tulane University, New Orleans	..	..	..	135	..	..	..	..	..	..	..	..	..	127	..	..	..	..
Johns Hopkins University, Baltimore	75	..	..	..	..	..	..	..	..	..	..	..	81	..	..	..	..	..
University of Maryland, Baltimore	..	..	96	..	..	..	..	..	..	..	..	..	88	..	..	..	..	..
Boston University, Boston	..	..	54	..	..	..	..	..	..	..	..	..	68	..	..	..	..	..
Harvard Medical School, Boston	..	..	136	..	..	..	..	..	..	..	..	..	142	..	..	..	..	..
Tufts College Medical School, Boston	..	..	100	..	..	..	..	..	..	..	..	..	101	..	..	..	..	..
University of Michigan, Ann Arbor	113	..	..	..	..	..	..	..	..	..	..	..	..	..	114	..	..	..
Wayne University, Detroit	..	..	68	..	..	..	..	..	..	..	..	..	65	..	..	..	..	..
University of Minnesota, Minneapolis	..	135	..	..	..	..	..	..	..	..	..	..	120	..	..	..	..	..
St. Louis University, St. Louis	..	..	98	..	..	..	..	..	..	..	..	..	136	..	..	..	..	..
Washington University, St. Louis	..	..	102	..	..	..	..	..	..	..	..	..	103	..	..	..	..	..
Creighton University, Omaha	..	..	59	..	..	..	..	..	..	..	..	..	60	..	..	..	..	..
University of Nebraska, Omaha	..	..	81	..	..	..	..	..	..	..	..	..	76	..	..	..	..	..
Albany Medical College, Albany, N. Y.	..	..	39	..	..	..	..	..	..	..	..	..	41	..	..	..	..	..
Columbia University, New York City	..	..	123	..	..	..	..	..	..	..	..	..	115	..	..	..	..	..
Cornell University, New York City	..	..	77	..	..	..	..	..	..	..	..	..	77	..	..	..	..	..
Long Island College of Medicine, Brooklyn	..	..	100	..	..	..	..	..	..	..	..	..	100	..	..	..	..	..
New York Medical College, New York City	..	..	80	..	..	..	..	..	..	..	..	..	97	..	..	..	..	..
New York University, New York City	..	..	132	..	..	..	..	..	..	..	..	..	127	..	..	..	..	..
Syracuse University, Syracuse, N. Y.	..	..	46	..	..	..	..	..	..	..	..	..	48	..	..	..	..	..
University of Buffalo, Buffalo	..	..	70	..	..	..	..	..	..	..	..	..	74	..	..	..	..	..
University of Rochester, Rochester, N. Y.	..	..	63	..	..	..	..	..	..	..	..	..	65	..	..	..	..	..
Duke University, Durham, N. C.	..	..	60	..	..	3	..	..	3	..	..	..	68	..	..	..	..	..
Bowman Gray School of Medicine, Winston-Salem, N. C.	..	..	38	..	..	..	..	..	..	..	..	..	48	..	..	..	..	..
Ohio State University, Columbus	..	..	67	..	..	..	..	..	1	..	..	..	77	..	..	..	..	..
University of Cincinnati, Cincinnati	..	81	..	..	..	..	..	..	..	..	..	..	80	..	..	..	..	..
Western Reserve University, Cleveland	..	..	73	..	..	..	..	..	..	..	..	..	87	..	..	..	..	..
University of Oklahoma, Oklahoma City	..	..	56	..	..	..	..	..	..	..	..	..	72	..	..	..	..	..
University of Oregon, Portland	..	..	66	..	..	..	..	..	..	..	..	..	71	..	..	..	..	..
Hahnemann Medical College, Philadelphia	..	..	107	..	..	..	..	..	..	..	..	..	126	..	..	..	..	..
Jefferson Medical College, Philadelphia	..	..	153	..	..	..	..	..	..	..	..	..	156	..	..	..	..	..
Temple University, Philadelphia	..	..	111	..	..	..	..	..	..	..	..	..	128	..	..	..	..	..
University of Pennsylvania, Philadelphia	..	..	153	..	..	..	..	..	..	..	..	..	133	..	..	..	..	..
University of Pittsburgh, Pittsburgh	..	..	78	..	..	..	..	..	..	..	..	..	77	..	..	..	..	..
Woman's Medical College, Philadelphia	..	..	..	..	..	29	..	..	..	..	..	..	..	..	..	..	..	..
Medical College of South Carolina, Charleston	..	..	48	..	..	..	..	..	..	..	..	..	50	..	..	..	..	..
Meharry Medical College, Nashville, Tenn.	..	..	..	..	..	59	..	..	..	..	..	..	..	..	62	..	..	..
University of Tennessee, Memphis, Tenn.	..	..	63	..	..	14	..	..	26	..	..	..	60	..	26	..	..	26
Vanderbilt University, Nashville, Tenn.	..	..	52	..	..	..	..	..	..	..	..	..	50	..	..	..	..	..
Southwestern Medical College, Dallas, Texas	..	..	..	..	..	54	..	..	..	..	..	..	..	..	48	..	..	..
Baylor University, Houston, Texas	..	..	..	..	15	..	..	..	..	..	..	..	..	39	..	..	..	..
University of Texas, Galveston	..	..	..	..	..	..	..	..	..	..	..	..	112	..	..	..	..	..
University of Utah, Salt Lake City	..	..	37	..	..	..	..	..	..	..	..	..	42	..	..	..	..	..
University of Vermont, Burlington	..	..	32	..	..	..	..	..	..	..	..	..	36	..	..	..	..	..
Medical College of Virginia, Richmond	..	..	76	..	..	..	..	..	..	..	..	..	101	..	..	..	..	..
University of Virginia, Charlottesville	..	..	77	..	..	..	..	..	..	..	..	..	65	..	..	..	..	..
Marquette University, Milwaukee	..	..	85	..	..	..	..	..	..	..	..	..	..	81	..	..	..	..
University of Wisconsin, Madison	..	..	61	..	..	..	..	..	..	..	..	..	65	..	..	..	..	..
Totals	113	291	3,914	343	15	572	29	0	45	0	0	4,522	242	317	508	0	0	41

formerly. About one half (34) think the students will be of about the same quality as before the war. Only one sixth (12) think incoming students will be better.

Since the ability to pay for a medical education is not a factor in the selection of men for premedical training under the army and navy program, it becomes important to know whether significant numbers of qualified men might now be enabled to enter medicine who could not do so formerly for financial reasons. Seventeen deans were unwilling or unable to express an opinion on this question. Twenty-nine thought that it seems clear that no careful study of this problem has been made and the estimates cited are opinions. The real facts would be difficult to unearth.

LICENSURE UNDER THE ACCELERATED MEDICAL SCHOOL PROGRAM, THE PREMEDICAL A. S. T. AND NAVY V-12 PROGRAMS, AND THE NINE MONTH INTERNSHIP

All states in the Union, as well as the District of Columbia, Alaska, Hawaii and Puerto Rico, have made certain adjustments in their licensure legislation or

practices, where such were required, to facilitate the licensure of graduates under the accelerated program, at least for the duration of the war. It now appears that these adjustments in certain states may not adequately meet the needs of those students who may spend a week or two less than thirty-six months in medical school. Such students are typical, because those starting school July 1, 1942, for example, are likely to graduate a week or so prior to July 1, 1945. Legislation in four states is such as might not provide for these students.

In Illinois the amended law reads ". . . the time elapsing between the beginning of the first year and the ending of the fourth year . . . (as regards) . . . students matriculating or entering upon such medical course during the years 1942, 1943 and 1944 . . . shall be not less than thirty-six months. . . ." A literal interpretation of this legislation would seem to bar the typical students, as well as students who may have entered the accelerated program in 1941 or will enter it in 1945 or later.

TABLE 8.—*Relationship of the Nine Month Internship to Licensure in All States Requiring an Internship*

Accepted as Fulfilling Internship Requirement	Additional Three Months in Civilian Hospital or Military Service Required	
	Will Give Examination at End of Nine Months	Will Not Give Examination Until Completion of Year's Service
Alaska	Alabama [1]	Illinois [2]
Delaware	District of Columbia [1]	New Hampshire
Idaho	Iowa [1]	New Mexico
Michigan [1]	New Jersey [1]	
Montana [1]	North Dakota	
Nevada	Oklahoma [1]	
Pennsylvania [1]	Oregon [1,2]	
West Virginia	Puerto Rico	
Wyoming	Rhode Island [1]	
	South Dakota [1,2]	
	Utah [1,2]	
	Vermont [1]	
	Washington [1]	
	Wisconsin	

Hawaii, which requires an internship for licensure, has not reported on the relationship of this requirement to the shortened internship.

Some states require the internship of graduates of medical faculties abroad and reciprocity or endorsement applicants.

1. Will also give examination on completion of the medical course but withhold license until internship is completed.
2. Military medical service must be in a military hospital.

In the District of Columbia the law specifies "four graded courses of not less than nine months each." Under a literal interpretation of this law also, students finishing in thirty-five and a fraction months might encounter difficulties.

The Georgia law requiring forty-two months to elapse "between the beginning of the student's first course of medical lectures and the date of his graduation" has not been amended. However, the Georgia Board of Medical Examiners has advised in effect that graduates of accelerated medical courses could qualify for licensure.

The Minnesota law provides for "four entire sessions of not less than thirty-six weeks each." Difficulties may occur under this law, since it calls for 144 weeks of medical work. The thirty-five plus months of a typical curriculum includes 152 plus weeks. Vacation periods are thereby limited to a total of eight weeks during the three year course.

The information received from those states whose licensure laws include specific premedical requirements seems to indicate that there should be no licensure difficulties encountered by students whose premedical work was taken under the A. S. T. or the Navy V-12 or comparably accelerated civilian programs.

For those states requiring an internship, table 8 indicates the status of licensure legislation as regards the nine month internship. At least for the duration of the war eight states and Alaska will accept a nine month internship as fulfilling the internship requirement. Twelve states, the District of Columbia and Puerto Rico require an additional three months in a civilian hospital or military service and will withhold the license until this is completed but will permit applicants for licensure to write the examination on completion of the nine month internship. In three states physicians are not eligible to take the examination until after completion of a year's internship, three months of which may be in the military service. Officers seeking licenses in these three states must delay licensure until after the war or seek furloughs to take the examinations. In the past it has been possible for officers to obtain furloughs for this purpose. Four states specifically require the military medical service to be in a military hospital.

FACULTY MEMBERS IN WAR SERVICES

On July 1, 1944 the 77 medical schools and schools of basic medical sciences in the United States had contributed a total of 5,828 of its faculty members to the armed forces. This number is somewhat larger than the 5,637 of last year and is still in excess of 10 per cent of the medical officers in the armed forces. It seems apparent that medical schools have contributed approximately as large a proportion of their faculties to the armed forces as the proportion of physicians not engaged in academic work who have been commissioned.

This depletion of faculties continues to handicap the teaching of more medical students and in less time than in normal years. Further faculty reductions have resulted from increasing participation in war research and special war assignments. As contrasted with 130 civilian faculty members engaged in full time war work a year ago, there are now 211 so employed, from 23 medical schools in the United States.

This relatively small figure represents serious losses in teaching staff in some critical areas, since practically all these men were recruited from the full time faculty members mainly in the basic sciences. Furthermore, this figure includes only those on full time war research. The total loss in teaching manpower is much greater, since even larger numbers of teachers are devoting a considerable part, but not all, of their time to war research.

From the 10 schools in Canada, 265 faculty members are in military service and 18 are engaged in full time war work.

The loyalty and devotion of faculty members remaining to carry on the increased work of the medical schools under adverse conditions is to be highly commended. In the demobilization period, special consideration should be given to the preferential early release of physicians on medical school faculties, to restore the quality of medical instruction to a higher level as soon as possible.

DEVELOPMENTS IN MEDICAL EDUCATION

During the past year the Medical School of the Southwestern Medical Foundation, located at Dallas, Texas, has been added by the Council to the list of approved medical schools. Dr. Tinsley Harrison is dean of the faculties and Dr. Donald Slaughter is dean

TABLE 9.—*Approved Medical Schools in the United States and Canada*

	Name and Location of School	1945 Pre-medical Requirement by Years#	Students by Classes, First Session Beginning in 1943						Graduates from July 1, 1943 to June 30, 1944	Executive Officer	
			1st Year	2d Year	3d Year	4th Year	5th Year or Intern Year	Totals			
	ARKANSAS										
1	University of Arkansas School of Medicine, Little Rock	60 sem. hrs.	79	74	66	60	...	279	60	Byron L. Robinson, M.D., Dean	1
	CALIFORNIA										
2	University of California Medical School, Berkeley-San Francisco	3	72	75	69	66	...	282	65	Francis Scott Smyth, M.D., Dean	2
3	College of Medical Evangelists, Loma Linda-Los Angeles	3	97	91	72	75	67†	335	67	Newton G. Evans, M.D., Dean, Loma Linda; W. F. Norwood, Ph.D., Asst. Dean, Los Angeles	3
4	University of Southern California School of Medicine, Los Angeles	90 sem. hrs.	65	65	54	54	49†	238	49	Burrell O. Raulston, M.D., Dean	4
5	Stanford University School of Medicine, Stanford University-San Francisco	2	61	62	59	60	56†	242	56	Loren Roscoe Chandler, M.D., Dean	5
	COLORADO										
6	University of Colorado School of Medicine, Denver	3	69	54	56	56	...	235	56	Maurice H. Rees, M.D., Dean	6
	CONNECTICUT										
7	Yale University School of Medicine, New Haven	3	60	62	47	54	...	223	49	Francis G. Blake, M.D., Dean	7
	DISTRICT OF COLUMBIA										
8	Georgetown University School of Medicine, Washington	2*	98	93	64	63	...	318	63	David V. McCauley, S.J., Ph.D., Dean	8
9	George Washington University School of Medicine, Washington	60 sem. hrs.	83	70	76	65	...	294	65	Walter A. Bloedorn, M.D., Dean	9
10	Howard University College of Medicine, Washington	2	77	61	70	49	...	257	48	John W. Lawlah, M.D., Dean	10
	GEORGIA										
11	Emory University School of Medicine, Atlanta	90 sem. hrs.	69	60	60	50	...	239	50	Russell H. Oppenheimer, M.D., Dean	11
12	University of Georgia School of Medicine, Augusta	2	78	75	60	46	...	259	45	G. Lombard Kelly, M.D., Dean	12
	ILLINOIS										
13	Loyola University School of Medicine, Chicago	60 sem. hrs.	88	80	77	67	...	312	70	Italo F. Volini, M.D., Dean	13
14	Northwestern University Medical School, Chicago	9	131	134	164	161	160†	590	161	J Roscoe Miller, M.D., Dean	14
15	University of Chicago, The School of Medicine	2⅔	65	71	62	73	...	271	72	A. C. Bachmeyer, M.D., Dean, Biology Division; F. J. Mullin, Ph.D., Assistant Dean of Students	15
16	University of Illinois College of Medicine, Chicago	2	171	175	168	162	...	676	161	Raymond B. Allen, M.D., Dean	16
	INDIANA										
17	Indiana University School of Medicine, Bloomington-Indianapolis	3	130	124	119	133	...	506	124	Willis D. Gatch, M.D., Dean	17
	IOWA										
18	State University of Iowa College of Medicine, Iowa City	3	89	88	76	64	...	317	64	Ewen Murchison MacEwen, M.D., Dean	18
	KANSAS										
19	University of Kansas School of Medicine, Lawrence-Kansas City	3 & Degree	78	85	85	82	...	330	83	Harry R. Wahl, M.D., Dean	19
	KENTUCKY										
20	University of Louisville School of Medicine, Louisville	2	96	89	89	89	...	363	88	John Walker Moore, M.D., Dean	20
	LOUISIANA										
21	Louisiana State University School of Medicine, New Orleans	3	100	79	81	79	...	339	79	Beryl I. Burns, M.D., Dean	21
22	Tulane University of Louisiana School of Medicine, New Orleans	3	140	130	139	120	...	529	119	Hiram W. Kostmayer, M.D., Dean	22
	MARYLAND										
23	Johns Hopkins University School of Medicine, Baltimore	2	75	74	73	73	...	295	69	Alan M. Chesney, M.D., Dean	23
24	University of Maryland School of Medicine and College of Phys. and Surg., Baltimore	2	102	83	96	90	...	371	90	Robert U. Patterson, M.D., Dean	24
	MASSACHUSETTS										
25	Boston University School of Medicine, Boston	2	78	68	56	46	...	248	46	Charles F. Branch, M.D., Dean	25
26	Harvard Medical School, Boston	2	124	124	141	137	...	526	132	C. Sidney Burwell, M.D., Dean	26
27	Tufts College Medical School, Boston	4	110	102	100	102	...	414	98	Dwight O'Hara, M.D., Acting Dean	27
	MICHIGAN										
28	University of Michigan Medical School, Ann Arbor	5	163	145	111	116	...	535	118	A. C. Furstenberg, M.D., Dean	28
29	Wayne University College of Medicine, Detroit	2	75	66	66	58	...	265	58	Edgar H. Norris, M.D., Dean	29
	MINNESOTA										
30	University of Minnesota Medical School, Minneapolis	2	121	123	140	110	119†	494	108	Harold S. Diehl, M.D., Dean	30
	MISSOURI										
31	St. Louis University School of Medicine, St. Louis	60 sem. hrs.	135	130	99	113	...	477	107	Alphonse M. Schwitalla, S.J., Ph.D., Dean	31
32	Washington University School of Medicine, St. Louis	2	87	85	109	116	...	397	110	Phillip A. Shaffer, Ph.D., Dean	32
	NEBRASKA										
33	Creighton University School of Medicine, Omaha	2	70	68	60	59	...	257	59	Charles M. Wilhelmj, M.D., Dean	33
34	University of Nebraska College of Medicine, Omaha	65 sem. hrs.	91	87	86	76	...	340	73	C. W. M. Poynter, M.D., Dean	34

	NEW YORK										
35	Albany Medical College, Albany	3	51	41	40	38	...	170	38	R. S. Cunningham, M.D., Dean	35
36	Long Island College of Medicine, Brooklyn	3	113	106	103	91	...	413	91	Jean A. Curran, M.D., President and Dean	36
37	University of Buffalo School of Medicine, Buffalo	2	86	78	70	61	...	295	61	Edward W. Koch, M.D., Dean	37
38	Columbia University College of Physicians and Surgeons, New York	2	119	114	124	109	...	466	108	Willard C. Rappleye, M.D., Dean	38
39	Cornell University Medical College, New York	3	84	77	80	78	...	319	75	Joseph C. Hinsey, Ph.D., Dean	39
40	New York Medical College, Flower and Fifth Avenue Hospitals, New York	2	100	98	92	83	...	373	83	J. A. W. Hetrick, M.D., President and Dean	40
41	New York University College of Medicine, New York	2	142	126	131	122	...	521	121	Donal Sheehan, M.D., Acting Dean	41
42	University of Rochester School of Medicine and Dentistry, Rochester	2	60	62	64	62	...	257	63	George H. Whipple, M.D., Dean	42
43	Syracuse University College of Medicine, Syracuse	2	57	53	46	38	...	194	38	H. G. Weiskotten, M.D., Dean	43
	NORTH CAROLINA										
44	Duke University School of Medicine, Durham	3	77	67	78	64	...	286	60	Wilburt C. Davison, M.D., Dean	44
45	Bowman Gray School of Medicine of Wake Forest College, Winston-Salem	2	51	44	35	31	...	161	27	C. C. Carpenter, M.D., Dean	45
	OHIO										
46	University of Cincinnati College of Medicine, Cincinnati	90 sem. hrs.	88	81	81	75	...	325	74	Stanley Dorst, M.D., Dean	46
47	Western Reserve University School of Medicine, Cleveland	2	91	85	74	67	...	317	66	Webster G. Simon, Ph.D., Acting Chairman, Administrative Committee	47
48	Ohio State University College of Medicine, Columbus	3	83	78	68	70	...	299	68	R. C. Baker, Ph.D., Acting Dean	48
	OKLAHOMA										
49	University of Oklahoma School of Medicine, Oklahoma City	2	76	69	56	51	...	252	51	Tom Lowry, M.D., Dean	49
	OREGON										
50	University of Oregon Medical School, Portland	2⅔ & Degree	78	72	70	64	...	284	63	D. W. E. Baird, M.D., Dean	50
	PENNSYLVANIA										
51	Hahnemann Medical College and Hospital of Philadelphia	2	154	138	113	116	...	521	115	William G. Schmidt, Ph.D., Acting Dean	51
52	Jefferson Medical College of Philadelphia	2	159	140	138	133	...	570	133	William M. Perkins, M.D., Dean	52
53	Temple University School of Medicine, Philadelphia	60 sem. hrs.	121	114	114	119	...	468	117	William N. Parkinson, M.D., Dean	53
54	University of Pennsylvania School of Medicine, Philadelphia	3	134	117	134	132	...	517	130	William Pepper, M.D., Dean	54
55	Woman's Medical College of Pennsylvania, Philadelphia	3	44	44	31	21	...	140	21	Marion Fay, Ph.D., Acting Dean	55
56	University of Pittsburgh School of Medicine, Pittsburgh	2	86	80	78	82	...	326	81	William S. McElroy, M.D., Dean	56
	SOUTH CAROLINA										
57	Medical College of the State of South Carolina, Charleston	2	50	46	49	43	...	188	43	Kenneth M. Lynch, M.D., Dean	57
	TENNESSEE										
58	University of Tennessee College of Medicine, Memphis	2	182	117	153	113	...	565	82	O. W. Hyman, Ph.D., Dean	58
59	Meharry Medical College, Nashville	2	65	61	62	62	...	250	62	Michael J. Bent, M.D., Dean	59
60	Vanderbilt University School of Medicine, Nashville	Degree	50	52	53	51	...	206	49	Waller S. Leathers, M.D., Dean	60
	TEXAS										
61	Southwestern Medical College of the Southwestern Medical Foundation, Dallas	60 sem. hrs.	64	70	70	66	...	270	61	Tinsley Harrison, M.D., Dean of Faculty; Donald Slaughter, M.D., Dean of Students	61
62	Baylor University College of Medicine, Houston	72 sem. hrs.	60	38	15	16	...	129	16	Walter H. Moursund, M.D., Dean	62
63	University of Texas School of Medicine, Galveston	2½	106	110	99	86	...	401	87	Chauncey D. Leake, Ph.D., Dean	63
	UTAH										
64	University of Utah School of Medicine, Salt Lake City	3	42	44	40	...	...	126	...	A. Cyril Callister, M.D., Dean	64
	VERMONT										
65	University of Vermont College of Medicine, Burlington	3	40	36	32	34	...	142	33	Clarence H. Beecher, M.D., Dean	65
	VIRGINIA										
66	University of Virginia Department of Medicine, Charlottesville	2	73	62	75	54	...	264	54	Harvey E. Jordan, Ph.D., Dean	66
67	Medical College of Virginia, Richmond	2	80	81	78	72	...	311	74	J. P. Gray, M.D., Dean	67
	WISCONSIN										
68	University of Wisconsin Medical School, Madison	2	75	74	59	57	...	265	57	Walter J. Meek, Ph.D., Acting Dean	68
69	Marquette University School of Medicine, Milwaukee	3	97	93	85	72	...	347	70	Eben J. Carey, M.D., Dean	69
	CANADA										
70	University of Alberta Faculty of Medicine, Edmonton, Alta	3	22	21	...	34	37‡	151	35	Allan C. Rankin, M.D., Dean	70
71	University of Manitoba Faculty of Medicine, Winnipeg, Man	2	60	55	58	56	62†	229	61	A. T. Mathers, M.D., Dean	71
72	Dalhousie University Faculty of Medicine, Halifax, N. S	2	50	40	47	32	37†	169	36	H. G. Grant, M.D., Dean	72
73	Queen's University Faculty of Medicine, Kingston, Ont	1	48	49	44	44	41‡	272	47	G. Spencer Melvin, M.D., Dean	73
74	University of Western Ontario Medical School, London, Ont	1	52	43	38	31	†	201	31	F. J. H. Campbell, M.D., Dean	74
75	University of Toronto Faculty of Medicine, Toronto, Ont	1	149	126	139	125	127‡	772	107	W. E. Gallie, M.D., Dean	75
76	McGill University Faculty of Medicine, Montreal, Que	3	116	102	91	100	...	409	97	J. R. Fraser, M.D., Dean	76
77	University of Montreal Faculty of Medicine, Montreal, Que	Degree	122	74	56	46	51†	298	52	Albert LeSage, M.D., Dean	77
78	Laval University Faculty of Medicine, Quebec, Que	Degree	122	105	71	61	57	416	57	Charles Vezina, M.D., Dean	78

Statistics of approved schools of the basic medical sciences will be found in table 10, page 1118.

These premedical requirements apply to civilian applicants in most instances. All schools in the United States will consider completion of the Army or Navy premedical program, by male applicants on active duty, as fulfilling academic admission requirements.

† Fifth year (internship) enrolment not included in total column.

‡ Sixth year enrolment: Alberta 37; Queens 46; Western Ontario 37; Toronto 106.

* For Army and Navy; all others degree required.

of students. The Bowman Gray School of Medicine, at Winston-Salem, N. C., has expanded from a school of the basic medical sciences to a four year medical school. Its first class graduated in December 1943. The University of Utah School of Medicine, at Salt Lake City, has also developed a four year program and graduates its first class in September 1944. Both Bowman Gray and Utah have been added to the Council's approved list, which increases the number of approved medical schools in the United States to 69.

There remain 8 schools of the basic medical sciences. The University of Alabama has virtually completed plans for expansion to the four year status, employing the clinical facilities of Hillman and Jefferson hospitals in Birmingham. One city block adjacent to the hospitals has been given to the university. One million dollars has been appropriated for the construction and equipment of basic science laboratories on this site after the war. Until then, Dr. Stuart Graves will continue as dean of the Basic Science School at Tuscaloosa. Dr. Roy R. Kracke is in charge at Birmingham. It is hoped that junior instruction will commence in Birmingham by July 1945.

At least 3 of the remaining basic science schools are seriously considering developing the full four years. This trend in the basic science schools may be ascribed to three major factors: (1) the increasing difficulty encountered by students in these schools to obtain admission to junior classes in other schools, (2) the closer integration of basic science and clinical work in medical education, requiring availability of clinical facilities for sophomore and even freshman work, and (3) the desire of states to increase the proportion of medical students in state schools who will remain in the state to practice medicine.

The war has accentuated the maldistribution of physicians to urban and rural communities. Several states are contemplating the formation of new medical schools "to provide doctors for rural communities." But there is no assurance that more doctors will practice in small towns if more doctors are produced. The production and the distribution of doctors are independent. The mere production of more doctors is more likely to produce overcrowding of physicians in large cities than to fill the unmet needs in rural areas.

APPROVED MEDICAL SCHOOLS

Medical schools and schools of the basic medical sciences in the United States and Canada approved by the Council on Medical Education and Hospitals of the American Medical Association for the academic session 1943-1944 are listed in tables 9 and 10, pages 1116, 1117 and 1118. The tables include quantitative premedical requirements for applicants not in the A. S. T. P. or V-12 premedical programs. The enrolment by classes, including fifth year students interning or engaged in research, and the total attendance, which does not include fifth year students, apply to the first academic year beginning 1943. The number of graduates from July 1, 1943 to June 30, 1944 is listed. The name of the dean or acting dean is also given. Figures for the sixth year enrolment in Canadian schools are given in a footnote.

The probationary status of the University of Arkansas and the University of Texas has been removed by the Council, so that at present no four year schools of medicine are on probation. Two schools of the basic medical sciences remain on probation.

The fifth or intern year is now required for the M.D. degree by only 5 schools in the United States: College of Medical Evangelists, Southern California, Stanford, Northwestern and Minnesota.

General historical information regarding all institutions on the approved list maintained by the Council appears on pages 1134 to 1142.

TABLE 10.—*Approved Schools of the Basic Medical Sciences in the United States and Canada*

	Name and Location of School	1945 Premedical Requirement by Years‡	Students by Classes, First Session Beginning in 1943			Executive Officer	
			1st Year	2d Year	Totals		
	ALABAMA						
1	University of Alabama School of Medicine, University (Tuscaloosa)	66 sem. hrs.	54	54	108	Stuart Graves, M.D., Dean	1
	MISSISSIPPI						
2	University of Mississippi School of Medicine, University	3	30	25	55	J. B. Looper, M.D., Dean	2
	MISSOURI						
3	University of Missouri School of Medicine, Columbia	2	45	35	80	Dudley S. Conley, M.D., Dean	3
	NEW HAMPSHIRE						
4	Dartmouth Medical School, Hanover	3 & degree	23	25	48	John P. Bowler, M.D., Dean	4
	NORTH CAROLINA						
5	University of North Carolina School of Medicine, Chapel Hill	3	50	41	91	W. Reece Berryhill, M.D., Dean	5
	NORTH DAKOTA						
6	*University of North Dakota School of Medicine, Grand Forks	90 sem. hrs.	29	28	57	H. E. French, M.D., Dean	6
	SOUTH DAKOTA						
7	*University of South Dakota School of Medical Sciences, Vermillion	2	26	18	44	Joseph C. Ohlmacher, M.D., Dean	7
	WEST VIRGINIA						
8	West Virginia University School of Medicine, Morgantown	3	30	25	55	Edward J. Van Liere, M.D., Dean	8
	CANADA						
9	University of Saskatchewan School of Medical Sciences, Saskatoon, Sask.	2	24	22	46	W. S. Lindsay, M.B., Dean	9

* On probation.

‡ These premedical requirements apply to civilian applicants in most instances. All schools in the United States will consider completion of the Army or Navy premedical program, by male applicants on active duty, as fulfilling academic admission requirements.

ENROLMENTS

Enrolment figures by classes for the first session beginning in 1943 are given in tables 9 and 10 and recapitulated in table 11. In the 77 schools in the United States there were 23,529 students studying medicine (excluding the fifth year), which is an increase of 898, or 4.0 per cent, above the preceding academic session. In the Canadian schools there were 2,475 students (excluding the fifth and sixth years), an enrolment increase of 89 students, or 3.7 per cent. In addition there were 451 fifth or intern year students in schools in the United States plus 262 fifth year, 226 sixth year students and 150 interns in Canada.

In schools offering the complete four years of work, the 4 schools in the United States with the highest enrolments were Illinois 676, Northwestern 590, Jefferson 570 and Tennessee 565. Eleven schools had enrolments exceeding 500. The 3 with the lowest enrolments were Baylor 129, Woman's Medical College 140 and Vermont 142. Utah, with 126 students, had no fourth year class during the session for which these data are given. In Canada the highest enrolment occurred at Toronto with 772 students in the six years, and the lowest at Alberta with 151 students in its five year course.

Alabama was the only basic science school with more than 50 students in a class; that school enrolled 54 students in each of the two classes. The lowest enrolment (in the United States) occurred at South Dakota, with 26 freshmen and 18 sophomores.

In table 12 are given the enrolments in the classes of the "present" academic session, which for most schools runs from about January to September 1944 and in all schools includes the month of May 1944.

TABLE 11.—*Total Enrolments by Classes in Medical Schools of the United States and Canada for the First Session Beginning in 1943, with Totals for Preceding and Following Academic Sessions. Students in the Intern Year Are Not Included*

	Freshmen	Sophomores	Juniors	Seniors	Total	Total Preceding Session*	"Present" Session Including May 1944
69 Medical Schools (U. S.)	6,232	5,776	5,640	5,257	22,905	21,911	23,153
8 Basic Science Schools (U. S.)	329	295	.....	.....	624	720	629
Total (U. S.)	6,561	6,071	5,640	5,257	23,529	22,631	23,782
9 Medical Schools (Canada)†	741	615	‡ 544	529	2,429‡	2,342	
1 Basic Science School (Canada)	24	22	.....	.....	46	44	
Totals (Canada)	765	637	544	529	2,475	2,386	
Totals U. S. and Canada	7,326	6,708	6,184	5,786	26,004	25,017	

* Academic session ending with admission of first class in 1943.
† The first four years in some Canadian schools do not correspond to those years in schools of the United States.
‡ Does not include 488 in fifth and sixth years.

For comparison with enrolments in the two preceding sessions, total figures are also given in the last column of table 11. In this session there were 23,782 students enrolled in the schools of the United States. This is a further increase of 253 students in excess of the preceding session. In the past three sessions enrolments have increased 2.7 per cent, 4.0 per cent and 1.1 per cent. Despite the low last overall increase, figures by classes for the past few sessions indicate that certain schools have increased the numbers in entering classes well beyond what is probably warranted.

This trend is evident in the figures of table 13, which gives the number of students enrolled in the four classes and in internships when required for graduation in medical schools of the United States, covering the past fourteen years. In each of the four medical school classes there were more students enrolled during the first academic session beginning in 1943 than at any previous time in the fourteen year period. Excluding the interns, enrolments have increased by 2,150, or 10 per cent, since the 1940-1941 academic session, although in some schools the increase has been considerably in excess of 10 per cent. The total enrolments at the present time are higher than at any time since 1907, when there were 159 medical schools in existence.

Table 13 also shows the continuing decrease in numbers in the required intern year.

TABLE 12.—*Enrolment, "Present" Academic Session, Including May 1944*

	1st Year	2d Year	3d Year	4th Year	Total
University of **Alabama**	58	52	..	..	110
University of **Arkansas**	75	71	65	64	275
University of **California**	74	72	74	70	290
College of Medical Evangelists	97	94	92	74	357
University of Southern California	65	63	65	55	248
Stanford University	61	60	62	59	242
University of **Colorado**	61	56	56	57	230
Yale University **(Connecticut)**	63	63	61	48	235
Georgetown University **(Dist. Col.)**	103	86	89	65	343
George Washington University	83	78	73	75	309
Howard University	74	69	58	70	271
Emory University **(Georgia)**	67	68	56	60	251
University of Georgia	76	74	68	60	278
Loyola University **(Illinois)**	89	73	78	77	317
Northwestern University	131	123	152	169	575
University of Chicago	65	61	62	61	249
University fo Illinois	165	164	184	167	680
Indiana University	128	100	98	111	437
State University of **Iowa**	87	68	86	73	314
University of **Kansas**	80	78	79	85	322
University of Louisville **(Kentucky)**	96	84	88	90	358
Louisiana State University	102	81	83	80	346
Tulane University	136	128	137	135	536
Johns Hopkins University **(Maryland)**	78	74	81	77	310
University of Maryland	95	99	88	96	378
Boston University **(Massachusetts)**	67	63	68	53	251
Harvard Medical School	125	123	139	142	529
Tufts College	111	102	101	100	414
University of **Michigan**	159	..	144	113	416
Wayne University	70	64	75	70	279
University of **Minnesota**	118	119	119	137	493
University of **Mississippi**	30	35	..	..	65
St. Louis University **(Missouri)**	146	124	136	98	504
University of Missouri	37	31	..	..	68
Washington University	86	79	105	102	372
Creighton University **(Nebraska)**	74	61	61	59	255
University of Nebraska	84	76	76	86	322
Dartmouth Medical School **(N. H.)**	24	22	..	..	46
Albany Medical College **(New York)**	50	45	41	39	175
Long Island College	114	107	99	100	420
University of Buffalo	86	81	75	70	312
Columbia University	121	110	118	123	472
Cornell University	83	76	79	79	317
New York Medical College	128	98	97	89	412
New York University	127	128	127	134	516
University of Rochester	67	66	63	66	262
Syracuse University	47	49	48	46	200
Duke University **(North Carolina)**	76	76	68	82	302
University of North Carolina	54	43	..	..	97
Bowman Gray School of Medicine	49	44	48	38	179
University of **North Dakota**	27	24	..	..	51
University of Cincinnati **(Ohio)**	82	79	80	81	322
Western Reserve University	85	83	88	73	329
Ohio State University	82	76	76	64	298
University of **Oklahoma**	76	72	72	56	276
University of **Oregon**	73	72	74	66	285
Hahnemann Med. Coll. **(Pennsylvania)**	159	138	126	107	530
Jefferson Medical College	159	140	156	135	590
Temple University	125	111	128	111	475
University of Pennsylvania	132	121	133	133	519
Woman's Medical College	45	45	32	21	143
University of Pittsburgh	88	79	77	78	322
Medical College of **South Carolina**	50	42	50	48	190
University of **South Dakota**	26	21	..	..	47
University of **Tennessee**	183	117	132	165	617
Meharry Medical College	66	63	62	61	252
Vanderbilt University	52	47	54	52	205
Southwestern Medical Coll. **(Texas)**	62	34	48	58	202
Baylor University	84	55	39	15	193
University of Texas	95	90	110	96	391
University of **Utah**	52	44	42	37	165
University of **Vermont**	38	38	36	32	144
University of **Virginia**	73	62	65	77	277
Medical College of Virginia	82	75	101	76	334
West Virginia University	30	29	..	..	59
University of **Wisconsin**	74	72	72	60	278
Marquette University	96	88	80	85	349
Totals	6,538	5,778	5,875	5,591	23,782

GRADUATES

Graduates from July 1, 1943 to June 30, 1944 are included in table 9, pages 1116 and 1117. In this period there were 5,134 graduates. The four schools graduating the most students were Illinois 161, Northwestern 161, Jefferson 133 and Harvard 132. The

smallest numbers were graduated from Baylor 16, Woman's Medical College 21 and Bowman Gray 27.

From the 9 medical schools of Canada there were 523 graduates. The largest number, 107, graduated from Toronto and the smallest number, 31, received degrees from Western Ontario.

TABLE 13.—*Students in the United States by Years, Including the Intern Year When Required for Graduation, 1931-1944*

	Preclinical		Clinical		Intern Year	Total
1930-1931	6,456	5,538	5,080	4,908	1,025	23,007
1931-1932	6 269	5,462	4,932	4,885	1,067	23,202
1932-1933	6,426	5,479	5,017	4,948	1,106	23,572
1933-1934	6,457	5,571	4,988	4,957	1,183	23,982
1934-1935	6,356	5,624	5,142	4,905	1,233	24,121
1935-1936	6,005	5,458	5,230	5,020	1,213	23,777
1936-1937	5 910	5,369	5,140	5,158	1,255	23,350
1937-1938	5,791	5,225	4,986	5,036	1,132	22,719
1938-1939	5,754	5,160	4,947	4,921	1,152	22,454
1939-1940	5,794	5,177	4,921	4,894	1,152	22,423
1940-1941	5,837	5,254	4,969	4,849	1,058	22,437
1941-1942	6,218	5,406	5,087	4,942	767	22,798
1942-1943	6,425	5,828	5,278	5,100	639	23,270
1943-1944	6,561	6,071	5,640	5,257	451	23,980

Table 14 gives the number of students and graduates for the past forty years. The effects of acceleration on numbers of graduates do not yet appear in these statistics because the latest figure consists mainly of those who graduated in December 1943. Most schools will graduate another class very soon after this Educational Number is published. In most schools there will have been two additional graduations (in about September 1944 and June 1945) before the appearance of the 1945 Educational Number. For further discussion of the effects of acceleration on numbers of graduates see "The Accelerated Program," page 1112.

GRADUATES BY STATES

The 77 schools in the United States are located in thirty-six states and the District of Columbia. The numbers of schools, students and graduates in these states are shown in table 15. Each of six states enrolled over a thousand students in their schools. Students and graduates of the 29 schools of these states total more than 45 per cent of all students and graduates in the United States. In order, these states are New York 9 schools, 3,008 students, 678 graduates; Pennsylvania 6 schools, 2,542 students, 597 graduates; Illinois 4 schools, 1,849 students, 464 graduates; Massachusetts 3 schools, 1,188 students, 276 graduates; California 4 schools, 1,097 students, 237 graduates, and Tennessee 3 schools, 1,021 students, 193 graduates.

Seven of the thirty-six states with schools had no graduates, since their schools did not offer the complete medical course. Twelve states had less than 100 graduates, the lowest being Vermont, with 33 graduates from its 1 medical school.

TABLE 14.—*Schools, Students and Graduates in the United States, 1905-1944*

	Schools	Students *	Graduates
1905	160	26,147	5,606
1910	131	21,526	4,440
1915	96	14,801	3,536
1920	85	13,798	3,047
1921	83	14,466	3,186
1922	81	15,635	2,529
1923	80	16,969	3,129
1924	79	17,728	3,562
1925	80	18,200	3,974
1926	79	18,840	3,992
1927	80	19,662	4,035
1928	80	20,545	4,202
1929	76	20,878	4,446
1930	76	21,597	4,565
1931	76	21,982	4,735
1932	76	22,135	4,936
1933	77	22,466	4,895
1934	77	22,799	5,035
1935	77	22,888	5,101
1936	77	22,564	5,183
1937	77	22,005	5,377
1938	77	21,587	5,194
1939	77	21,302	5,089
1940	77	21,271	5,097
1941	77	21,379	5,275
1942	77	22,031	5,161
1943	76	22,631	5,223
1944	77	23,529	5,134

* Includes figures for schools of the basic medical sciences.

RESIDENCE OF STUDENTS

The permanent home residence of all students in medical schools of the United States and Canada during the first academic session commencing in 1943 is indicated in table 16, pages 1122 and 1123. It is felt that a tabulation of the permanent residence of students may give a better indication of the geographic source of medical students than would a tabulation of the birthplace, since many students may leave the state of their birth and become identified with another state through years of residence. On the other hand, it is recognized that the home residence at the time of admission to a medical school might have been of relatively recent origin in some cases.

Included in the table are 23,529 students in schools of the United States and 2,475 students in the first four years plus 488 fifth and sixth year students in Canada, totaling 26,492. Students in the intern year are not included.

Every state in the Union, including the District of Columbia, had 18 or more medical students in the schools listed. Residents of New York provided the greatest number of students, 2,881. Next in order are Pennsylvania 1,857, Illinois 1,384, Ohio 1,298 and California 1,162. These five states supply a total of 8,582 students, or nearly a third of the registration of

TABLE 15.—*Schools, Students and Graduates by States* *

	Schools	Students	Graduates
Alabama	1	108	...
Arkansas	1	279	60
California	4	1,097	237
Colorado	1	235	56
Connecticut	1	223	49
District of Columbia	3	869	176
Georgia	2	498	95
Illinois	4	1,849	464
Indiana	1	506	124
Iowa	1	317	64
Kansas	1	330	83
Kentucky	1	363	88
Louisiana	2	868	198
Maryland	2	666	159
Massachusetts	3	1,188	276
Michigan	2	800	176
Minnesota	1	494	108
Mississippi	1	55	...
Missouri	3	954	217
Nebraska	2	597	132
New Hampshire	1	48	...
New York	9	3,008	678
North Carolina	3	538	87
North Dakota	1	57	...
Ohio	3	941	208
Oklahoma	1	252	51
Oregon	1	284	63
Pennsylvania	6	2,542	597
South Carolina	1	188	43
South Dakota	1	44	...
Tennessee	3	1,021	193
Texas	3	800	164
Utah	1	126	...
Vermont	1	142	33
Virginia	2	575	128
West Virginia	1	55	...
Wisconsin	2	612	127
Totals	77	23,529	5,134

* Excluding fifth or intern year students.

the 87 schools in the United States and Canada. However, these states provide facilities for the training of well over a third of all students of the United States and Canada, since 9,437 students were enrolled in the 26 schools in these five states.

Of the 2,963 students in Canadian schools in all six years 175, or 5.9 per cent, came from the United States. Most of these, 121, were enrolled at McGill, nearly a third of whose student body of 409 comes from the United States.

There were 197 students from the United States territories and possessions in 40 schools in the United States. None were enrolled in Canada.

Students from Canada numbered 2,745, of whom 2,708 were in the 10 Canadian schools and 37 in 9 schools in the United States. Twenty-four Canadians attended the College of Medical Evangelists, 5 the University of Minnesota. In none of the other 7 schools were there more than 2 Canadian students.

Foreign students numbered 260, of whom 180 attended 43 schools in the United States and 80 were enrolled in 6 Canadian schools. Schools enrolling the largest numbers of foreign students were the College of Medical Evangelists, 39, and Tulane, 21.

TABLE 17.—*Enrolment of Students from States in Which There Are No Medical Schools*

	Students Enrolled	No. of Schools	School with Greatest Number from State and Number of Students
Arizona	79	35	Northwestern (8)
Delaware	44	19	Jefferson (8)
Florida	238	36	Emory (43)
Idaho	108	29	Oregon (13)
Maine	89	26	Tufts (13)
Montana	79	25	St. Louis (13)
Nevada	18	13	Stanford (3)
New Jersey	858	58	New York Univ. (97)
New Mexico	39	16	Chicago (5)
Rhode Island	110	22	Tufts (29)
Washington	360	41	Northwestern (59) Oregon (59)
Wyoming	32	12	Colorado (7)
Total	2,054		

There are twelve states in the Union in which no medical schools are located. These states are listed in table 17, which also shows the number of students from each of these states enrolled in medical schools, as well as the number of schools to which these students went. There were 2,054 such students, over half of whom came from New Jersey and Washington. From New Jersey 858 students attended 58 medical schools. The greatest number, 97 students, attended New York University. From Washington there were 360 students in 41 schools; of these, 59 students attended Oregon and 59 Northwestern.

Table 18 gives the resident and nonresident enrolment in each of the 77 schools in the United States. More than one third of the students were enrolled in schools outside the state of their residence. The following 23 schools enrolled more nonresident students than students from the state in which the school is located:

Medical Evangelists	Tulane	Cornell
Yale	Johns Hopkins	Duke
Georgetown	Harvard	Hahnemann
George Washington	St. Louis	Woman's
Howard	Washington	Meharry
Northwestern	Creighton	Vanderbilt
Chicago	Dartmouth	Marquette
Louisville	Columbia	

Only 4 schools admitted no students nonresident in the state: Georgia, Mississippi, Missouri and Texas.

REQUIRED INTERNSHIP

The medical schools requiring a hospital internship for the M.D. degree are shown in table 19. Six schools in the United States and 4 in Canada require an internship for graduation. No change in the list has occurred within the past year.

In the past year there were 451 students in the United States and 150 in Canada, a total of 600, reported as completing the fifth or intern year in fulfilment of the internship requirement for the M.D. degree.

TABLE 18.—*Resident and Nonresident Students*

	Resident Students	Nonresident Students	Totals
University of **Alabama**	99	9	108
University of **Arkansas**	262	17	279
University of **California**	269	13	282
College of Medical Evangelists	58	277	335
University of Southern California	224	14	238
Stanford University	200	42	242
University of **Colorado**	195	40	235
Yale University **(Connecticut)**	52	171	223
Georgetown University **(Dist. of Columbia)**	37	281	318
George Washington University	96	198	294
Howard University	35	222	257
Emory University **(Georgia)**	150	89	239
University of Georgia	259	0	259
Loyola University **(Illinois)**	191	121	312
Northwestern University	211	379	590
University of Chicago, The School of Med.	115	156	271
University of Illinois	610	66	676
Indiana University	490	16	506
State University of **Iowa**	306	11	317
University of **Kansas**	303	27	330
University of Louisville **(Kentucky)**	170	193	363
Louisiana State University	290	49	339
Tulane University of Louisiana	150	379	529
Johns Hopkins University **(Maryland)**	47	248	295
University of Maryland	192	179	371
Boston University **(Massachusetts)**	142	106	248
Harvard Medical School	114	412	526
Tufts College	323	91	414
University of **Michigan**	361	174	535
Wayne University	248	17	265
University of **Minnesota**	421	73	494
University of **Mississippi**	55	0	55
University of **Missouri**	80	0	80
St. Louis University	84	393	477
Washington University	157	240	397
Creighton University **(Nebraska)**	50	207	257
University of Nebraska	322	18	340
Dartmouth Med. School **(New Hampshire)**	5	43	48
Albany Medical College **(New York)**	135	35	170
Long Island College of Medicine	302	111	413
University of Buffalo	248	47	295
Columbia University	216	250	466
Cornell University	148	171	319
New York Medical College	274	99	373
New York University	373	148	521
University of Rochester	141	116	257
Syracuse University	162	32	194
University of **North Carolina**	69	22	91
Duke University	75	211	286
Bowman Gray School of Medicine	110	51	161
University of **North Dakota**	51	6	57
University of Cincinnati **(Ohio)**	236	89	325
Western Reserve University	250	67	317
Ohio State University	298	1	299
University of **Oklahoma**	243	9	252
University of **Oregon**	202	82	284
Hahnemann Med. College **(Pennsylvania)**	259	262	521
Jefferson Medical College	330	240	570
Temple University	278	190	468
University of Pennsylvania	293	224	517
Woman's Medical College	34	106	140
University of Pittsburgh	317	9	326
Medical College of **South Carolina**	182	6	188
University of **South Dakota**	40	4	44
University of **Tennessee**	308	257	565
Meharry Medical College	10	240	250
Vanderbilt University	81	125	206
Southwestern Medical College **(Texas)**	256	14	270
Baylor University	114	15	129
University of Texas	401	0	401
University of **Utah**	119	7	126
University of **Vermont**	109	33	142
University of **Virginia**	166	98	264
Medical College of Virginia	175	136	311
West Virginia University	42	13	55
University of **Wisconsin**	248	17	265
Marquette University	143	204	347
Totals	14,811	8,718	23,529

TABLE 16.—*Residence*

Marginal Number		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	Marginal Number
		Alabama	Arizona	Arkansas	California	Colorado	Connecticut	Delaware	Dist. of Columbia	Florida	Georgia	Idaho	Illinois	Indiana	Iowa	Kansas	Kentucky	Louisiana	Maine	Maryland	Massachusetts	Michigan	
1	University of Alabama School of Medicine	19	..	..	..	..	..	..	..	3	..	..	1	1	..	..	..	1	..	..	1	..	1
2	University of Arkansas School of Medicine	..	..	582	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2
3	University of California Medical School	1	1	..	260	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	3
4	College of Medical Evangelists	1	1	..	58	5	2	1	5	8	1	5	9	4	9	7	1	1	1	5	8	15	4
5	University of So. California School of Medicine	..	3	..	224	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	5
6	Stanford University School of Medicine	..	2	..	240	..	2	..	..	..	..	1	1	..	1	1	..	..	..	..	..	2	6
7	University of Colorado School of Medicine	..	1	..	3	195	1	..	..	..	..	2	1	1	..	1	..	..	..	..	..	..	7
8	Yale University School of Medicine	1	1	1	4	2	52	..	..	..	2	..	2	3	2	2	1	..	5	1	32	3	8
9	Georgetown University School of Medicine	1	..	..	8	..	17	1	37	3	1	1	1	..	..	..	..	..	5	13	22	1	9
10	George Washington University School of Med.	4	5	..	29	1	5	..	193	..	..	7	2	3	..	..	1	..	1	13	5	2	10
11	Howard University College of Medicine	5	1	2	3	..	..	1	35	7	8	..	8	2	1	..	1	8	..	6	4	2	11
12	Emory University School of Medicine	11	..	..	..	..	..	2	..	43	170	..	..	1	..	..	2	1	..	..	..	..	12
13	University of Georgia School of Medicine	..	..	..	..	..	..	..	..	..	259	..	..	..	..	..	..	..	..	..	..	..	13
14	Loyola University School of Medicine	1	..	..	4	..	4	..	..	..	..	..	191	12	9	1	..	1	..	..	1	11	14
15	Northwestern University Medical School	6	8	1	27	5	..	..	1	2	..	11	211	29	13	8	3	..	..	..	1	29	15
16	University of Chicago, The School of Medicine	..	1	1	5	2	2	..	1	..	..	9	115	12	8	2	1	..	1	..	1	14	16
17	University of Illinois College of Medicine	3	..	..	1	..	1	..	1	..	..	..	610	6	3	1	1	..	1	2	2	4	17
18	Indiana University School of Medicine	..	..	..	..	..	..	..	..	..	..	..	1	490	1	..	1	..	..	1	..	1	18
19	State University of Iowa College of Medicine	..	..	..	1	..	1	..	..	..	..	..	1	..	306	..	..	..	..	..	..	..	19
20	University of Kansas School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	393	..	..	..	..	..	..	20
21	University of Louisville School of Medicine	5	2	1	9	1	1	..	..	3	1	4	5	28	2	..	170	..	..	..	1	5	21
22	Louisiana State University School of Medicine	8	..	..	..	..	..	..	..	3	1	..	..	..	..	..	..	250	..	..	..	..	22
23	Tulane University of Louisiana School of Med.	52	6	8	8	..	..	..	..	36	14	..	1	1	..	4	6	150	..	..	3	..	23
24	Johns Hopkins University School of Medicine	3	..	2	9	..	5	2	12	13	9	1	6	4	..	2	1	..	5	47	19	6	24
25	University of Maryland School of Medicine	2	3	..	2	..	6	3	10	8	11	..	1	1	..	..	1	..	..	192	11	..	25
26	Boston University School of Medicine	1	..	..	12	..	15	1	1	..	..	..	1	1	..	..	..	..	10	..	142	..	26
27	Harvard Medical School	8	5	2	18	2	13	1	6	5	3	2	23	5	2	..	7	..	6	4	114	9	27
28	Tufts College Medical School	..	..	..	..	..	22	..	..	..	..	..	1	..	..	..	..	..	13	..	323	..	28
29	University of Michigan Medical School	..	1	..	5	..	4	..	3	4	..	2	8	6	..	..	4	..	..	..	..	361	29
30	Wayne University College of Medicine	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	248	30
31	University of Minnesota Medical School	..	1	..	..	1	..	..	..	1	..	1	2	..	5	3	1	..	..	..	2	1	31
32	University of Mississippi School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	32
33	University of Missouri School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	33
34	St. Louis University School of Medicine	1	4	1	43	1	2	..	..	2	..	7	31	18	12	8	1	..	2	1	8	8	34
35	Washington University School of Medicine	15	6	5	18	4	1	..	..	1	..	19	47	4	7	13	..	..	..	..	1	2	35
36	Creighton University School of Medicine	..	2	..	49	8	..	..	..	..	..	4	3	..	31	12	..	..	..	..	4	..	36
37	University of Nebraska College of Medicine	..	..	..	1	..	1	..	..	1	..	..	1	..	3	..	..	..	..	..	1	1	37
38	Dartmouth Medical School	..	..	..	1	1	2	1	1	..	..	..	4	..	..	..	..	..	..	..	9	..	38
39	Albany Medical College	..	..	..	..	1	1	..	..	..	..	..	3	..	..	..	..	..	..	..	7	1	39
40	Long Island College of Medicine	5	..	..	3	1	29	1	1	4	..	..	1	..	..	..	1	..	2	..	8	1	40
41	University of Buffalo School of Medicine	..	..	..	1	2	1	..	..	..	..	1	..	1	..	..	..	..	1	1	2	3	41
42	Columbia University College of Phys. and Surg.	5	3	1	2	1	29	..	3	4	3	3	8	2	3	1	1	1	3	2	34	2	42
43	Cornell University Medical College	5	..	..	10	2	10	..	2	2	1	..	2	..	1	..	..	..	7	..	19	1	43
44	New York Medical College	..	1	..	3	..	12	..	..	..	..	..	1	..	..	..	1	..	..	..	11	..	44
45	New York University College of Medicine	..	..	..	1	..	16	1	2	1	1	..	1	..	..	..	..	..	..	..	8	1	45
46	Univ. of Rochester School of Med. and Dentistry	..	1	..	18	..	3	2	2	1	1	..	2	2	..	1	2	1	2	..	17	2	46
47	Syracuse University College of Medicine	1	2	..	1	..	2	..	..	1	..	..	1	..	..	..	..	..	..	..	2	..	47
48	University of North Carolina School of Medicine	..	..	..	..	..	1	..	3	4	..	..	..	..	..	..	..	..	..	..	..	..	48
49	Duke University School of Medicine	6	1	2	1	..	..	1	2	7	10	2	3	1	..	..	2	..	..	3	5	6	49
50	Bowman Gray Sch. of Med. of Wake Forest Coll.	3	1	..	1	..	..	..	..	5	6	..	..	..	..	1	4	1	..	..	..	1	50
51	University of North Dakota School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	51
52	University of Cincinnati College of Medicine	..	..	..	3	1	1	..	..	2	..	..	8	10	..	..	29	..	1	..	..	5	52
53	Western Reserve University School of Medicine	..	..	..	2	..	2	1	..	..	..	3	2	..	..	..	..	..	1	..	5	10	53
54	Ohio State University College of Medicine	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	54
55	University of Oklahoma School of Medicine	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	55
56	University of Oregon Medical School	..	..	..	4	..	..	..	..	..	..	13	..	..	..	..	..	..	..	..	..	..	56
57	Hahnemann Medical College	9	4	5	22	..	10	1	1	5	1	1	6	4	3	..	2	..	1	0	3	57
58	Jefferson Medical College of Philadelphia	8	..	..	5	..	16	8	..	2	1	5	..	4	1	..	..	2	1	7	1	58
59	Temple University School of Medicine	1	..	..	4	..	3	7	2	9	..	3	2	1	1	..	..	2	..	1	8	59
60	University of Pennsylvania School of Medicine	13	2	..	4	..	6	6	2	4	..	1	3	4	..	3	1	2	7	4	7	1	60
61	Woman's Medical College of Pennsylvania	..	..	..	13	1	1	..	1	4	2	2	8	..	..	..	..	..	..	..	1	6	61
62	University of Pittsburgh School of Medicine	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	62
63	Medical College of the State of South Carolina	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	63
64	Univ. of South Dakota School of Med. Sciences	..	..	..	..	..	..	..	..	..	..	..	..	1	2	..	..	..	..	..	..	..	64
65	University of Tennessee College of Medicine	17	1	21	..	..	..	..	..	12	2	2	4	..	..	2	18	1	..	1	1	..	65
66	Meharry Medical College	12	2	2	3	1	1	4	5	10	..	21	6	..	..	2	7	11	..	1	4	7	66
67	Vanderbilt University School of Medicine	22	..	1	..	1	..	..	1	5	7	..	1	..	..	3	28	..	..	..	..	..	67
68	Southwestern Medical College	..	2	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	68
69	Baylor University College of Medicine	2	..	..	1	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	69
70	University of Texas School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	70
71	University of Utah School of Medicine	..	1	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	71
72	University of Vermont College of Medicine	..	..	..	..	..	6	..	..	..	..	..	..	..	1	..	..	..	..	..	11	1	72
73	University of Virginia Department of Medicine	5	1	..	1	1	2	..	5	5	..	..	1	..	..	..	3	..	1	4	3	1	73
74	Medical College of Virginia	..	1	..	2	..	..	..	1	6	..	..	..	..	..	..	4	..	..	1	1	1	74
75	West Virginia University School of Medicine	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	75
76	University of Wisconsin Medical School	..	..	..	1	..	..	..	..	..	..	1	3	..	..	..	1	..	..	1	2	1	76
77	Marquette University School of Medicine	..	..	..	17	3	2	..	..	..	..	3	9	2	1	..	..	..	..	..	3	26	77
78	University of Alberta Faculty of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	78
79	University of Manitoba Faculty of Medicine	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	79
80	Dalhousie University Faculty of Medicine	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	80
81	Queen's University Faculty of Medicine	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	81
82	University of Western Ontario Medical School	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	82
83	University of Toronto Faculty of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	83
84	McGill University Faculty of Medicine	1	..	..	24	..	1	3	..	..	..	1	2	..	1	..	..	..	6	1	13	1	84
85	University of Montreal Faculty of Medicine	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	2	..	2	..	85
86	Laval University Faculty of Medicine	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	6	..	86
87	Univ. of Saskatchewan School of Med. Science	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	87
	Totals	348	79	318	1162	245	307	44	247	238	556	108	1384	672	428	384	298	469	89	307	914	803	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	

of Students

	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52		
Marginal Number	Minnesota	Mississippi	Missouri	Montana	Nebraska	Nevada	New Hampshire	New Jersey	New Mexico	New York	North Carolina	North Dakota	Ohio	Oklahoma	Oregon	Pennsylvania	Rhode Island	South Carolina	South Dakota	Tennessee	Texas	Utah	Vermont	Virginia	Washington	West Virginia	Wisconsin	Wyoming	U.S. Territories and Possessions	Canada	Foreign	Totals	Marginal Number
1	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	108	1
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3	..	1	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	1	..	3	222	3
4	9	2	2	2	7	1	..	2	2	15	1	5	3	4	7	6	..	1	2	6	6	..	..	2	27	1	6	..	4	21	39	335	4
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47	..	..	..	..	..	..	..	6	..	162	..	..	2	..	..	9	..	..	..	..	..	..	..	..	..	..	..	..	4	..	1	194	47
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78	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	151	..	151	78
79	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	228	..	229	79
80	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	139	26	169	80
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82	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	198	..	201	82
83	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	761	9	772	83
84	..	..	..	1	..	2	10	3	..	39	3	3	1	..	..	5	..	..	..	1	..	..	..	3	..	3	1	1	..	..	29	409	84
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86	..	..	..	..	..	..	6	4	..	6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	476	86
87	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	46	..	46	87
	548	256	408	79	411	18	85	858	39	2881	451	124	1298	322	263	1857	110	256	123	474	1007	250	128	448	360	246	521	32	197	2745	260	20492
	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52		

Although relatively few schools require the internship for the M.D. degree, this is required for licensure by twenty-three states, the District of Columbia, Alaska, Hawaii and Puerto Rico. Table 8, page 1115, lists these states and indicates the relationship of this requirement to the nine month internship. In the past year New Mexico has added the internship requirement. Some states require the internship of graduates from schools abroad and applicants for reciprocity or endorsement. The licensing boards of Illinois, Michigan, North Dakota, Pennsylvania and Washington require the internship to be a rotating service, while New Jersey recommends this type of service.

A few of the medical schools and licensing boards maintain their own list of hospitals acceptable for intern training, but the list of approved internships compiled by the Council on Medical Education and Hospitals is generally used.

Government restrictions on the use of paper necessitated omission of the Councils list from the Educational Number of THE JOURNAL. However, copies of the revised list of hospitals approved for internships and residencies have been printed and will be sent to all approved medical schools, medical libraries, approved hospitals, state licensing bodies, specialty boards and other interested agencies. The list is also included in the reprint edition of the Educational Number.

TABLE 19.—*Internship Required by Medical Schools*

College of Medical Evangelists
University of Southern California School of Medicine
Stanford University School of Medicine
Northwestern University Medical School
University of Minnesota Medical School
Duke University School of Medicine
University of Alberta Faculty of Medicine
University of Manitoba Faculty of Medicine
Dalhousie University Faculty of Medicine
University of Montreal Faculty of Medicine

DISTRIBUTION BY SEX

Students in the first academic session commencing in 1943 and graduates from July 1, 1943 to June 30, 1944 in the United States and Canada classified according to sex are shown in table 20. The enrolment was 25,113 men and 1,379 women. Graduates numbered 5,390 men and 267 women. All but 5 of the 87 schools reported women students. These schools regularly do not admit women. They are Georgetown, Harvard, St. Louis, Dartmouth and Jefferson. Emory and Queen's (Canada), which in the past did not admit women, now report 1 and 4 women students respectively.

Women students in the United States numbered 1,176 as compared with 22,353 men. In Canada there were 203 women and 2,760 men students. In the 1 medical college for women there were 140 students and 21 graduates. Nine schools, including 2 in Canada, enrolled more than 30 women. There were 74 at Toronto and 39 each at Illinois and at New York Medical College.

There were 267 women graduates from 66 of the 78 four year medical schools. In the United States there were 239 women graduates and 4,895 men. In Canada there were 28 women graduates and 495 men.

Table 21 shows the distribution of students and graduates by sex for a period of nine years. The percentages of women medical students and graduates in the United States since 1905 are shown in table 22. For the academic session commencing with the first class entering in 1943, the percentage enrolment (5.0

TABLE 20.—*Distribution by Sex*

	Students		Graduates	
	Men	Women	Men	Women
University of **Alabama**	105	3	0	0
University of **Arkansas**	273	6	59	1
University of **California**	250	32	58	7
College of Medical Evangelists	313	22	66	1
University of Southern California	230	8	49	0
Stanford University	231	11	54	2
University of **Colorado**	220	15	51	5
Yale University **(Connecticut)**	206	17	44	5
Georgetown University **(Dist. of Columbia)**	318	0	63	0
George Washington University	275	19	62	3
Howard University	245	12	46	2
Emory University **(Georgia)**	238	1	50	0
University of Georgia	250	9	44	1
Loyola University **(Illinois)**	298	14	67	3
Northwestern University	576	34	155	6
University of Chicago, The School of Med.	260	11	71	1
University of Illinois	637	39	154	7
Indiana University	491	15	118	6
State University of **Iowa**	297	20	61	3
University of **Kansas**	314	16	83	0
University of Louisville **(Kentucky)**	355	8	86	2
Louisiana State University	321	18	77	2
Tulane University of Louisiana	513	16	115	4
Johns Hopkins University **(Maryland)**	262	33	61	8
University of Maryland	351	20	85	5
Boston University **(Massachusetts)**	231	17	40	6
Harvard Medical School	526	0	131	1
Tufts College	398	16	96	2
University of **Michigan**	506	29	117	1
Wayne University	253	12	55	3
University of **Minnesota**	467	27	98	10
University of **Mississippi**	51	4	0	0
University of **Missouri**	77	3	0	0
St. Louis University	477	0	107	0
Washington University	375	22	102	8
Creighton University **(Nebraska)**	247	10	58	1
University of Nebraska	332	8	71	2
Dartmouth Med. School **(New Hampshire)**	48	0	0	0
Albany Medical College **(New York)**	150	20	32	6
Long Island College of Medicine	391	22	84	7
University of Buffalo	281	14	57	4
Columbia University	442	24	102	6
Cornell University	306	13	70	5
New York Medical College	334	39	74	9
New York University	483	38	110	11
University of Rochester	246	11	62	1
Syracuse University	185	9	37	1
University of **North Carolina**	88	3	0	0
Duke University	275	11	58	2
Bowman Gray School of Medicine	158	3	27	0
University of **North Dakota**	55	2	0	0
University of Cincinnati **(Ohio)**	306	19	69	5
Western Reserve University	307	10	66	0
Ohio State University	289	10	66	2
University of **Oklahoma**	239	13	49	2
University of **Oregon**	277	7	62	1
Hahnemann Medical College **(Pennsylvania)**	496	25	115	0
Jefferson Medical College	570	0	133	0
Temple University	438	30	105	12
University of Pennsylvania	497	20	125	5
Woman's Medical College	0	140	0	21
University of Pittsburgh	312	14	80	1
Medical College of **South Carolina**	183	5	41	2
University of **South Dakota**	43	1	0	0
University of **Tennessee**	551	14	82	0
Meharry Medical College	238	12	60	2
Vanderbilt University	199	7	48	1
Southwestern Medical College **(Texas)**	261	9	59	2
Baylor University	125	4	15	1
University of Texas	378	23	84	3
University of **Utah**	122	4	0	0
University of **Vermont**	132	10	30	3
University of **Virginia**	255	9	49	5
Medical College of Virginia	289	22	67	7
West Virginia University	52	3	0	0
University of **Wisconsin**	240	25	55	2
Marquette University	343	4	68	2
University of Alberta **(Canada)**	136	15	32	3
University of Manitoba	208	21	58	3
Dalhousie University	164	5	36	0
Queen's University	268	4	43	4
University of Western Ontario	184	17	28	3
University of Toronto	698	74	99	8
McGill University	377	32	93	4
University of Montreal	282	16	50	2
Laval University	402	14	56	1
University of Saskatchewan	41	5	0	0
Totals	25,113	1,379	5,390	267

per cent) was somewhat less than in the preceding year (5.1 per cent), and the percentage of graduates (4.7 per cent) was somewhat higher than in the preceding year (4.6 per cent).

We may expect increases in the enrolment of women in the next entering classes, with the current limitations on the supply of qualified men. However, it is not apparent that there is a large reservoir of qualified women students interested in and prepared to study medicine. The ratio of women applicants to women accepted in medical schools has been about the same as the ratio for men. Should schools determine to admit a considerably larger proportion of women in the future, they would probably be unable to do so without accepting students with qualifications inferior to those required in the past from either men or women.

LOAN FUNDS AND SCHOLARSHIPS

Since over 85 per cent of the students in medical schools are now being financed under the Army and Navy programs, the need for student loans and scholarships has been greatly reduced. At the present time needy and deserving civilian students can probably be adequately provided for locally. In many instances university and college funds for these purposes have accumulated from lack of demand for them. Such funds should be carefully conserved, because of the likelihood that there will soon be a higher percentage of civilians in our medical schools. Since the accelerated program must be continued to fulfil Army and Navy agreements, financial hardships may be encountered by civilians. There may again occur the need for special sources of aid similar to that provided in the past by the generous grants of the W. K. Kellogg Foundation and by government loans.

TABLE 21.—*Distribution by Sex in the United States and Canada, 1936-1944*

Year	Students		Graduates	
	Male	Female	Male	Female
1935-1936	24,219	1,254	5,388	268
1936-1937	23,787	1,244	5,624	261
1937-1938	23,234	1,307	5,439	252
1938-1939	22,919	1,293	5,290	285
1939-1940	22,903	1,291	5,430	273
1940-1941	22,853	1,308	5,527	310
1941-1942	23,551	1,333	5,397	305
1942-1943	24,183	1,317	5,450	271
1943-1944	25,113	1,379	5,390	267

PART TIME, SPECIAL AND GRADUATE STUDENTS

Students in these categories, shown in table 23, are included in none of the preceding tabulations. Part time students (72, in 18 schools of the United States and Canada) were about as many as a year ago, although that number represented a substantial decrease below peacetime numbers.

Special students include those carrying work in such fields as public health, physicians reviewing for specialty board examinations and students preparing to become physical therapists or laboratory technicians. Curriculums in these and other fields may involve some work in the medical school. There were 167 such students in this category reported from 30 schools during the academic session here reported. This compares with 190 in the preceding year and 416 in the year before that.

There were 211 students not candidates for the medical degree pursuing medical subjects in 16 medical schools in the United States and Canada. The preceding year saw 434 such students enrolled. In general, these are graduate students seeking a higher degree other than the M.D.

The reduction in numbers of students in these groups is due to the war. We may look forward to the time when graduate students taking medical courses will increase in numbers and when substantial numbers of qualified medical students will desire and be able to carry a part time medical course while working toward a higher degree in one of the biologic sciences.

TABLE 22.—*Women in Medicine in the United States*

Year	Women Students	Percentage of All Students	Women Graduates	Percentage of All Graduates
1905	1,073	4.1	219	4.0
1910	907	4.0	116	2.6
1915	592	4.0	92	2.6
1920	818	5.8	122	4.0
1925	910	5.0	204	5.1
1926	935	5.0	212	5.4
1927	964	4.9	189	4.7
1928	929	4.5	207	4.9
1929	925	4.4	214	4.8
1930	955	4.4	204	4.5
1931	990	4.5	217	4.6
1932	955	4.3	208	4.2
1933	1,056	4.7	214	4.4
1934	1,020	4.5	211	4.2
1935	1,077	4.7	207	4.1
1936	1,133	5.0	246	4.7
1937	1,113	5.1	238	4.4
1938	1,161	5.4	237	4.6
1939	1,144	5.4	260	5.1
1940	1,145	5.4	253	5.0
1941	1,146	5.4	280	5.3
1942	1,164	5.3	279	5.4
1943	1,150	5.1	241	4.6
1944	1,176	5.0	239	4.7

TABLE 23.—*Part Time, Special and Graduate Students During the First Session Commencing in 1943*

	Part Time	Special	Graduate
University of Alabama	3	..	..
University of Arkansas	..	4	..
University of California	..	2	18
University of Georgia	5	..	..
Loyola University	..	9	..
Northwestern University	..	50	82
University of Chicago	..	4	..
Indiana University	3	..	..
University of Kansas	8	3	..
Tulane University	..	2	..
Johns Hopkins University	10	11	4
University of Michigan	9	6	..
Wayne University	1	..	..
University of Mississippi	3	..	..
University of Missouri	..	2	..
University of Nebraska	..	..	5
Columbia University	..	5	24
New York Medical College	..	10	7
New York University	..	3	2
University of Buffalo	3	1	..
University of Rochester	..	1	..
Bowman Gray School of Medicine	4	1	..
University of Cincinnati	..	2	..
Western Reserve University	..	1	..
University of Oklahoma	3	2	3
University of Oregon	..	3	6
University of Pittsburgh	8	..	..
Woman's Medical College	2	1	1
University of South Dakota	3	6	..
Meharry Medical College	..	1	21
University of Tennessee	..	27	4
Vanderbilt University	1	..	..
Baylor University	..	2	..
Southwestern Medical College	2	1	..
University of Texas	..	1	1
University of Virginia	..	1	2
McGill University	1	..	..
University of Manitoba	..	1	1
University of Toronto	3	..	30
University of Western Ontario	..	4	..
Total	72	167	211

GRADUATES WITH BACCALAUREATE DEGREES

At the present time no school in the United States requires a degree for admission. In Canada, Montreal and Laval have this requirement. In 1945 three schools (Vanderbilt, Montreal and Laval) will require a degree from civilian applicants. Three schools (Kansas, Oregon and Dartmouth) required the student to earn a bachelor's degree during the first year in medical school. Yet 75 per cent of all the graduates from 77 four year schools in the United States and Canada also held baccalaureate degrees, as shown in table 24. This does not include those earning the B.S. in Medicine, who are presented in the next section.

In the United States 4,131 (or 80 per cent) of the 5,134 medical graduates also held bachelor's degrees, and in Canada 289 (or 55 per cent) of the 523 medical graduates also held the additional degree. All the graduates of the following eight schools held both degrees: Stanford, Yale, Johns Hopkins, Minnesota, Albany, Western Reserve, Oregon and Jefferson.

TABLE 24.—*Graduates with Baccalaureate Degrees*

	Graduates	Degrees
University of **Arkansas**	60	23
University of **California**	65	63
College of Medical Evangelists	67	40
University of Southern California	49	38
Stanford University	56	56
University of **Colorado**	56	53
Yale University **(Connecticut)**	49	49
Georgetown University **(District of Columbia)**	63	61
George Washington University	65	43
Howard University	48	42
Emory University **(Georgia)**	50	40
University of Georgia	45	42
Loyola University **(Illinois)**	70	42
Northwestern University	161	125
University of Chicago, The School of Medicine	72	71
University of Illinois	161	84
Indiana University	124	57
State University of **Iowa**	64	36
University of **Kansas**	83	81
University of Louisville **(Kentucky)**	88	62
Louisiana State University	79	69
Tulane University of Louisiana	119	95
Johns Hopkins University **(Maryland)**	69	69
University of Maryland	90	63
Boston University **(Massachusetts)**	46	43
Harvard Medical School	132	129
Tufts College	98	95
University of **Michigan**	118	100
Wayne University	58	56
University of **Minnesota**	108	108
St. Louis University **(Missouri)**	107	99
Washington University	110	101
Creighton University **(Nebraska)**	59	31
University of Nebraska	73	17
Albany Medical College **(New York)**	38	38
Long Island College of Medicine	91	80
University of Buffalo	61	34
Columbia University	108	102
Cornell University	75	60
New York Medical College	83	76
New York University	121	114
University of Rochester	63	55
Syracuse University	38	35
Duke University **(North Carolina)**	60	46
Bowman Gray School of Medicine	27	16
University of Cincinnati **(Ohio)**	74	23
Western Reserve University	66	66
Ohio State University	68	66
University of **Oklahoma**	51	34
University of **Oregon**	63	63
Hahnemann Medical College **(Pennsylvania)**	115	104
Jefferson Medical College	133	133
Temple University	117	107
University of Pennsylvania	130	128
Woman's Medical College	21	19
University of Pittsburgh	81	72
Medical College of **South Carolina**	43	4
University of **Tennessee**	82	59
Meharry Medical College	62	56
Vanderbilt University	49	48
Southwestern Medical College **(Texas)**	61	45
Baylor University	16	13
University of Texas	87	51
University of **Vermont**	33	32
University of **Virginia**	54	37
Medical College of Virginia	74	66
University of **Wisconsin**	57	27
Marquette University	70	39
University of Alberta **(Canada)**	35	17
University of Manitoba	61	24
Dalhousie University	36	16
Queen's University	47	15
University of Western Ontario	31	2
University of Toronto	107	33
McGill University	97	78
University of Montreal	52	48
Laval University	57	56
Totals	5,657	4,420

GRADUATES WITH THE B.S. IN MEDICINE

Certain graduates of 30 medical schools in the United States and of 3 of the medical schools in Canada received the Bachelor of Science degree in Medicine. There were 450 such degrees awarded in the United States and 7 in Canada, a total of 457. The largest single group to receive the degree were 87 graduates of the University of Illinois. Indiana awarded 64 and Cincinnati 41. Other schools granted fewer than 34 and 21 schools less than 10 each.

TABLE 25.—*Fees, First Session Entering in 1943*

	Number of Schools
Under $99	0
$100 to 199	8
200 to 299	29
300 to 399	14
400 to 499	17
500 or over	28
Total	87

FEES

The eighty-seven medical and basic science schools in the United States and Canada have been arranged in five groups in table 25 according to the tuition fees charged resident students for the first academic session commencing in 1943. The data are based on the average tuition fee charged for the complete medical course and includes such minor charges as those for matriculation, breakage, diploma and graduation.

There is a continuous upward trend in tuition fees. No school now charges less than $100 for the year. The average resident fees charged by medical schools in the United States in the past five years, ending with the first academic session starting in 1943, have been $378, $386, $395, $407 and $409.

Thirty-four schools in the United States and 6 in Canada make an additional charge for nonresidents. The Army and Navy pay nonresident fees for their students. These sums vary considerably in amount. Toronto charges $5 for first year students and $10 for others. Five schools charge $50 or less annually. Four schools (Georgia, Indiana, Louisiana State and Dartmouth) have an annual nonresident fee of $400 or more. Dartmouth charges $460 annually, the highest fee for nonresidents.

INTERNSHIPS AND RESIDENCIES

POSTWAR GRADUATE TRAINING

One of the major responsibilities of the medical profession today is the development of adequate facilities and opportunities for the advanced training of physicians returning from military service. Anticipating this need, the Council on Medical Education and Hospitals began more than a year ago to make a careful investigation of the educational facilities in the graduate and postgraduate fields. Nearly 1,300 institutions and agencies, including medical schools, hospitals, departments of health, state medical associations and specialty boards, were requested to furnish information regarding training programs now available or under consideration in relation to possible postwar needs. The response was encouraging, for it showed constructive planning already under way and also an earnest desire on the part of all groups concerned to cooperate to the fullest extent in meeting whatever demands the future may impose. A preliminary report on this study was published in THE JOURNAL, Jan. 1, 1944.

It is recognized that various kinds of training programs will be required, such as refresher and review courses, graduate lectures and clinics, continuation internships, hospital residencies, fellowships, basic medical science studies, individual preceptorships, graduate externships and perhaps other forms. The probable demand for postwar training is not yet fully known, but this question is now being studied by the Committee on Postwar Medical Service working in collaboration with the Surgeons General of the Army, Navy and Public Health Service. An analysis of the initial survey involving 3,000 medical officers was published in THE JOURNAL, June 24, 1944. A further report appears in the present issue of THE JOURNAL, page 1099.

These studies of the postwar educational desires of medical officers will facilitate further intelligent planning in the development and organization of suitable training programs. The Council in cooperation with the Committee on Postwar Medical Service and the examining boards in medical specialties will continue its activities in the field of postwar graduate medical education and will prepare, as soon as possible, a list of all available educational opportunities designed to meet the needs of returning medical officers.

NECROPSY PERFORMANCE

Under the present accelerated program of medical education it is particularly essential that all requirements of the internship be fulfilled so that young physicians may receive adequate preparation for civilian and military service. It has long been recognized that one of the most important functions in the training of interns is the correlation of clinical and pathologic studies. Any deficiency in pathologic material, therefore, will seriously impair the quality of house staff instruction.

The success of a necropsy program will in the final analysis depend on the whole hearted cooperation of the medical staff, interns and resident physicians, administrative officers and other hospital personnel. It is important that a necropsy study be requested on all hospital deaths, both private and ward, for each service should contribute its proportionate share to the educational program. The individual departments should likewise furnish a minimum of 15 per cent, so that a well balanced supply of pathologic material may be available for teaching. If one service fails to provide the requisite amount, an added burden must necessarily be placed on other departments if a satisfactory rate is to be accomplished for the hospital as a whole. To insure that postmortem examinations are requested on all deaths, it is suggested that house officers be required in each instance to file a report in the superintendent's office containing either a signed permit or a notation why the necropsy could not be obtained. This procedure has been extremely helpful in many hospitals, for it creates further interest among the medical staff and serves to stimulate the interns and residents to greater effort.

The Council is cognizant of the many difficulties confronting hospitals at the present time, yet its responsibility in the maintenance of educational standards is such that it cannot justifiably continue the approval of intern training programs that are unable in a reasonable length of time to correct deficiencies in necropsy performance. It is strongly urged, therefore, that hospitals with low necropsy rates should immediately exert every effort to obtain sufficient material for instruction. The ratio of necropsies, it should be noted, has long been regarded as a reliable index of the quality of educational service in hospitals.

LATIN AMERICAN PHYSICIANS

The Council is deeply interested in the development of educational opportunities for Latin American physicians, who are coming to this country in increasing numbers for graduate training. The decline of learning and science, including medical education, in Europe during the war will tend to increase the importance of the United States as a center for advanced training for years to come. Thus we may expect a continual increase in the number of Latin American physicians who will be seeking further training in the schools and hospitals of the United States. This tendency deserves the full support of the medical profession in this country, which will share in a mutually beneficial exchange of ideas and the cementing of lasting inter-American friendships.

A study is now being made by the Council to determine the number of Latin American physicians currently in training in the United States, the type of training involved and the extent to which educational facilities in hospitals may need to be expanded to meet possible future needs. Qualified medical graduates of Latin American schools may from the Council's point of view serve as interns and resident physicians in approved hospitals. To assist such applicants in obtaining suitable appointments, lists of available internships and residencies will be prepared and will also be furnished to the various agencies that are interested in the training of medical personnel from the other American republics. The Council has already established contacts with the following Washington agencies: the Institute of International Education, the Division of Science, Education and Art of the State Department, the Office of the Coordinator of Inter-American Affairs and the Pan American Sanitary Bureau.

The Directing Board of the Procurement and Assignment Service has announced that graduates of Latin American schools will not be counted in hospital quotas. This ruling should do much to facilitate the appointment of Latin American physicians and thus help to establish a wider scope of hospital training in the United States.

THE 9-9-9 PROGRAM

On Jan. 1, 1944 the Procurement and Assignment Service instituted the 9-9-9 plan of internships, assistant residencies and residencies. This program created an internship of nine months duration for medical graduates holding a reserve commission, an assistant residency of nine additional months for one third of the group and a further residency of nine months available to one half of the commissioned officers receiving assistant residency training. The purpose of this plan was to provide a more equitable distribution of house officers in the interest of civilian hospital care, to insure the maintenance of at least a partial house staff at the assistant residency and residency levels and to create a more rapid supply of young medical officers for the armed forces than would be available under a twelve months internship with no further deferments for reserve officers.

In the allocation of interns and resident physicians, state quotas were established, individual hospitals receiving approximately 60 per cent of the number of house officers actually on duty in 1940. Allowances were made, however, for increased patient loads, teaching obligations and other significant factors. The state office of the Procurement and Assignment Service was permitted to make certain minor adjustments as warranted in individual cases, but otherwise the hospitals were expected to follow the quotas originally assigned for the nine months period.

The Council on Medical Education and Hospitals was asked by the Procurement and Assignment Service to act as a clearing house for hospitals with unfilled quotas and for interns and residents seeking hospital appointments. In accordance with this request, lists of hospitals needing interns and resident physicians have been published in THE JOURNAL at weekly intervals since November 1943. This service has been effective in meeting the needs of many institutions and applicants and will be continued as a means of assisting hospitals and medical graduates in obtaining house staff appointments.

The 9-9-9 program cannot be defended on purely educational grounds, yet it was the only method of deferment of commissioned officers as assistant residents and residents on which agreement could be reached. The only alternative was the continuance of the twelve months internship without any opportunity of further deferment. This was considered less desirable, for it had already been shown that under the accelerated program of medical education graduations every nine months integrated poorly with the one year internship. As a result, wasteful overlaps occurred during which the educational returns to the house officer were minimal. After considering the advantages and disadvantages and weighing the possible alternatives, it is recognized that the 9-9-9 program is the best available plan under present wartime conditions. Being created only as a war emergency measure, it should be discontinued as soon as conditions will permit the reestablishment of the regular training programs.

APPROVED INTERNSHIPS AND RESIDENCIES

In the standardization and approval of hospitals, the Council is primarily concerned with the development of high grade educational services for the continued training of medical graduates. The main consideration in this work is the organization of training programs in full compliance with the standards of the Council. It is also essential that a sufficient number of approved

TABLE 26.—*Civilian Hospitals Approved for Internships—1944*

	Number of Hospitals	Internships Reported	Interns on Duty (Jan.)
Alabama	5	31	31
Arizona	2	6	5
Arkansas	3	18	11
California	37	335	374
Colorado	9	51	59
Connecticut	18	124	94
Delaware	4	17	20
District of Columbia	9	83	79
Florida	6	28	26
Georgia	9	61	58
Illinois	56	445	434
Indiana	15	106	99
Iowa	9	30	35
Kansas	7	29	26
Kentucky	8	33	29
Louisiana	11	132	153
Maine	3	12	14
Maryland	16	180	151
Massachusetts	38	312	273
Michigan	29	237	231
Minnesota	13	95	107
Missouri	24	205	185
Montana	2	4	2
Nebraska	9	33	27
New Hampshire	1	8	8
New Jersey	39	257	188
New York	102	1,087	1,040
North Carolina	8	75	76
North Dakota	1	3	...
Ohio	40	274	245
Oklahoma	5	30	36
Oregon	5	43	38
Pennsylvania	78	536	487
Rhode Island	4	35	20
South Carolina	1	12	30
Tennessee	10	98	86
Texas	19	106	110
Utah	5	24	25
Vermont	2	5	4
Virginia	10	64	63
Washington	11	54	62
West Virginia	7	22	28
Wisconsin	20	95	101
Totals	710	5,438	5,170

TABLE 27.—*Classification of Approved Residencies—1944*

(Civilian hospitals only)

Specialty	Assistant Residencies Offered	Residencies Offered[1]	Total Residencies[2]	Number of Hospitals
Anesthesiology	40	61	101	48
Cardiology	1	3	4	7
Communicable diseases	15	39	54	18
Dermatology and syphilology	21	54	75	35
Epilepsy	..	1	1	1
Fractures	6	7	13	5
Gynecology	24	19	43	20
Malignant diseases	16	54	70	17
Medicine	365	495	860	243
Mixed	45	77	122	74
Neurology	29	29	58	31
Neurosurgery	12	33	45	31
Obstetrics	50	75	125	59
Obstetrics and gynecology	166	202	368	107
Ophthalmology	44	126	170	57
Ophthalmology and otolaryngology	38	77	115	40
Orthopedics	69	155	215	87
Otolaryngology	61	115	176	74
Pathology	64	169	233	185
Pediatrics	206	213	419	124
Physical medicine	..	3	3	3
Plastic surgery	1	5	6	4
Psychiatry	119	326	445	136
Radiology	72	122	194	150
Surgery	531	528	1,059	287
Thoracic surgery	13	23	36	20
Traumatic surgery	..	1	1	2
Tuberculosis	66	174	240	93
Urology	58	84	142	79
Totals	2,123	3,270	5,393	*

1. Includes fellowships.
2. This total is not a complete report of available peacetime facilities, since some hospitals failed to report residencies temporarily discontinued under the present quota system.
* Number of hospitals approved for residency training, 675.

services be available so that all applicants may have an opportunity to obtain acceptable hospital training.

With the steady increase in number of approved intern hospitals, the question has arisen whether the Council is approving more internships than is warranted by the demand for them in normal times. This appears not to be the case.

The peacetime requirements can best be understood in relation to the growth and development of internships since 1914, when the first list of approved hospitals was published by the American Medical Association. In that year there were 508 general hospitals approved, 2,667 internships available and 3,594 medical graduates. Not until 1926, when 4,727 internships and 3,962 medical graduates were reported, did hospital facilities begin to exceed the number of students graduating each year. By 1941, however, the internships had reached a total of 8,100, whereas the number of graduates was only 5,200.

While it would seem that the shortage of house officers in recent years might be attributed mainly to this apparent overproduction of available internships, it should be noted that under ordinary conditions the size of the graduating class does not determine the number of interns engaged in hospital service. In 1939, for example, when there were 5,089 medical graduates in the United States, the approved hospitals reported 7,765 internships and 7,448 interns actually on duty. This represents a ratio of interns to medical graduates of 1.46 to 1. If the available internships are compared with the number of interns, a proportion of 1.04:1 is obtained. The corresponding ratios for 1940 are 1.5:1 and 1.04:1. This indicates that under normal conditions it is necessary to provide internships far in excess of the number of students graduating each year. In the two years cited, the annual number of interns equaled approximately one and one-half times the number of medical graduates in the United States.

At the present time there are 710 civilian hospitals approved for intern training, which report a total of 5,438 internships. In January the approved hospitals had 5,170 interns on duty, as shown in table 26.

Included in the intern list of 1914 were 95 special hospitals, which could accommodate 428 applicants. This classification of special services was continued until 1927, when a separate residency list was established by the Council. The first list contained the names of 278 hospitals, which reported a total of 1,776 residencies. Since 1927, however, the facilities for specialized hospital training have more than tripled in number. This indicates not only a growing professional interest in specialization but also an evident desire on the part of hospitals to assist in the advanced training of young physicians. The highest number of available residencies was apparently reached in January 1943, when a total of 5,796 positions were listed in 722 approved hospitals. These included 1,762 assistant residencies, 3,323 residencies and 711 fellowships.

Under the new quota system many of the residencies have been discontinued, but these will no doubt be reestablished as soon as conditions again become favorable. Additional training programs will also be organized in relation to postwar needs, as previously mentioned in this report. From reports received early this year, it has been calculated that a total of 5,393 residencies, assistant residencies and fellowships are available in the civilian hospitals approved for residency training. This figure relates to normal peacetime resident requirements but should not be regarded as a complete report, since many of the hospitals did not include the residencies that have recently been discontinued. A classification of residencies by types of service is shown in table 27.

GRADUATE CONTINUATION COURSES FOR PRACTICING PHYSICIANS

The necessity for continuation courses of study in the medical specialties has never been more urgent than at the present time. Physicians in civilian practice have been compelled to enlarge their field of activity and to refresh their knowledge of the intricacies of modern diagnosis and treatment. Physicians in military service and returning medical officers are also encountering problems. The demand for all means of instruction is greater than it has ever been. Medical educators and interested agencies throughout the country are attempting to assist physicians called on to assume new responsibilities by offering refresher courses or continuation courses and by the presentation of scientific papers or lectures on timely subjects. These individuals, who will give or have given so generously of their time to participate in the instructional programs, constitute a large and distinguished faculty of medicine. The efforts of individual physicians with their increasing personal responsibilities and institutions and other agencies with greatly depleted staffs to assist in the presentation of these opportunities is noteworthy.

The Council on Medical Education and Hospitals publishes semiannually advance information concerning postgraduate continuation courses for practicing physicians. These include courses in a wide variety of fields in clinical medicine and the basic sciences. The courses are for variable periods from a few days to several months. Some are concentrated full time courses and others are part time. In THE JOURNAL for July 8, 1944 there were listed 331 such courses available during the latter half of the current year. The opportunities listed are offered by hospitals, medical schools, graduate medical schools or other agencies in twenty-six states and include thirty-eight specialty or subspecialty subjects. Institutions offering continuation courses are invited to announce such courses in these semiannual lists compiled by the Council.

In the following paragraphs mention is made of some of the recent and noteworthy developments in graduate education. An analysis of the courses offered during the period July 1, 1943 to June 30, 1944 is also presented.

RECENT DEVELOPMENTS

The United States Public Health Service is planning to offer a three weeks course at Hot Springs National Park, Arkansas, in the management and control of the venereal diseases. Also under the auspices of the Public Health Service 15 to 20 physicians are appointed to traineeships in the diagnosis and treatment of cancer. Appointments are for one year. If satisfactory progress has been made, a trainee may be appointed for a second year and again for a third year. Trainees receive a stipend of $6 a day.

The fifteenth annual postgraduate symposium on heart disease will be given in California in November at the Los Angeles County Hospital. This symposium is sponsored by the Los Angeles Heart Association and the Los Angeles Tuberculosis and Health Association.

The staff of the Georgia Warm Springs Foundation is again offering to practicing physicians a five day course in the treatment of acute and convalescent poliomyelitis sponsored by the Post Graduate School of Physical Therapy of the foundation through a grant from the National Foundation for Infantile Paralysis.

The Institute for Psychoanalysis, Chicago, together with the University of Illinois, has developed a course in psychosomatic medicine which will be offered during the coming fall quarter and will be available to physicians, interns and residents. No fee will be charged.

The twenty-ninth annual postgraduate medical teaching venture sponsored by the Inter-State Postgraduate Medical Association of North America will be held in Chicago, Oct. 17-20, 1944. The sponsoring agencies this year are the Illinois State Medical Society and the Chicago Medical Society. The Chicago hospitals, clinics and medical schools will furnish clinical material.

An intensive two weeks postgraduate course in obstetrics consisting of lectures, laboratory methods, bedside instruction and observation of complicated deliveries is offered four times during the school year by Indiana University School of Medicine.

Two refresher courses in obstetrics, each of two weeks' duration, will be given at Louisiana State University School of Medicine sponsored by the Louisiana State Board of Health. The courses are financed from Social Security funds allocated by the Children's Bureau, U. S. Department of Labor.

The University of Michigan School of Public Health will give courses in tropical diseases, industrial health and public health economics. Eight months' academic and field training is offered continuously. The School of Public Health, in cooperation with field facilities provided by the W. K. Kellogg Foundation, the Michigan State Department of Health, the Detroit Department of Health, the General Motors Corporation, the Chrysler Corporation, the Ford Motor Company and other organizations in nearby communities, is also prepared at all times to give special instruction in all phases of public health practice.

No hospital clinics were given by the Kansas City Southwest Clinical Society during the past year. However, a series of lectures and symposiums will be held in affiliation with the University of Kansas School of Medicine.

A ten weeks intensive course in venereal diseases for practicing physicians is given continuously at the Bureau of Social Hygiene by the New York State Department of Health in cooperation with the United States Public Health Service. This course involves every phase of the clinical and public health aspects of venereal diseases.

The New York Academy of Medicine's Annual Fortnight will be devoted to "Infections and Their Treatment." Special emphasis will be placed on the more recent chemotherapeutic agents.

Courses in public health and related fields for one quarter are offered by the University of North Carolina School of Public Health in cooperation with the United States Public Health Service, the Children's Bureau, the Reynold's Foundation and the Rockefeller Foundation.

Duke University's contribution to postgraduate work consists of internships from one to two weeks for physicians in practice. Graduates are invited to the various clinics in medicine, surgery, obstetrics and other specialties and the clinical pathologic conferences held weekly.

The Ohio State Medical Association holds annually a forum on allergy. During the present year it is beginning a series of lectures planned to run for five years, at which it is planned to have lectures on the fundamentals of allergy.

A course in caudal analgesia of one week is offered by the Philadelphia Lying-In Hospital subsidized by the United States Public Health Service.

The Pennsylvania Department of Health, Division of Health Education, and collaborating agencies, are sponsoring a series of health institutes throughout the state to discuss wartime health problems of the commonwealth. Leaders of the medical, dental and nursing professions in Pennsylvania and nationally known public health experts have taken part in these institutes. The first regional health institute was held in Erie in November. At this first institute twenty-two agencies participated.

Postgraduate courses are offered continuously throughout the year in Tennessee. The state is divided into ten districts, and the instructor circulates in the district for a period of ten weeks. This development is sponsored by the Tennessee State Medical Association. There are six centers in each district. At each center the instructor spends a day.

The University of Wisconsin offers opportunities for observation courses at the Wisconsin General Hospital, Madison. Physicians may come at any time for a period of from one to five months.

Refresher courses will again be offered by the American College of Physicians in the autumn of 1944. Such courses will be given in Illinois, Massachusetts, Minnesota, New York, Oregon and Pennsylvania.

The American Academy of Ophthalmology and Otolaryngology offers a home study course in ophthalmology or otolaryngology, or both, on the first of each month. The registrant is sent a selected list of reading on the topic of that month, which it is estimated should require one to two and one-half hours daily. On the last of each month a series of twenty questions on the reading of the past month is sent to each registrant. The answers are corrected, graded and returned to the registrant. These home study courses have been carried on for five years and have been oversubscribed every year. The value of these home study courses is recognized by the specialty boards, and registrants are recommended for residencies and candidates for board certification, although it is specifically understood that completion of the academy courses does not necessarily fulfil the requirements of the boards for fundamental training.

The value of refresher or continuation courses in the postwar plans of graduate education for returning medical officers is referred to in the analysis presented on page 1099 of this issue of THE JOURNAL.

The excellent opportunities outlined are mentioned to present the variability of the courses being offered throughout the country. THE JOURNAL for July 8, 1944 presents these and many others in detail. Mention should also be made of the systematic courses offered by organized graduate schools including Tulane, Hopkins, Harvard, Tufts, the Center for Continuation Study of the University of Minnesota, Buffalo, Columbia, the New York Polyclinic, the University of Pennsylvania and many others.

Systematic courses formerly given in many instances have been discontinued because of the war emergency, the shortage of teaching personnel and transportation difficulties. In other instances, however, new opportunities are being developed and further efforts are encouraged, since there is a real need for an equal geographic distribution of such opportunities.

ANALYSIS OF COURSES OFFERED IN 1943-1944

In presenting this analysis of graduate and postgraduate courses which have been offered during the annual period July 1, 1943 to July 1, 1944 the statistical summaries are divided into three groups: courses in which instruction was offered to physicians in or near their home communities, courses providing ample facilities for clinical instruction and, lastly, a group including clinical conferences, graduate assemblies, study courses and so forth.

Eight states (Illinois, Kansas, Massachusetts, Michigan, New York, Oklahoma, Tennessee and Wisconsin) provided opportunities for physicians to continue professional study in or near their home communities. These courses reached approximately sixty-seven centers within these states. Subjects of these courses included cardiology, chest diseases, general medicine, industrial medicine, military medicine, ophthalmology and otolaryngology, public health, surgical diagnosis, tropical diseases and venereal diseases. The War Sessions of the American College of Surgeons, consisting of a full day's program, were available in the winter and spring months in fifteen states.

Agencies which were active participants in providing these opportunities, either independently or jointly, included state and county medical societies in Illinois, Kansas, Massachusetts, Michigan, Oklahoma, Tennessee and Wisconsin, the two medical schools in Michigan, the University of Kansas, Albany Medical College, Vanderbilt University and the University of Tennessee. The state departments of health in Kansas, New York and Tennessee were active in cooperating in programs in those states. Other agencies included the Commonwealth Fund and the Horace H. and Mary A. Rackham Fund.

Sessions of one day were most common and consisted of both didactic and clinical instruction, didactic instruction being most commonly given. The facilities of hospitals, clinics and hotels were used for presentation of this type of instruction. The instructors for these extramural courses were chosen from physicians practicing in the state in which the courses were offered as well as from out of state men. The faculties of 11 medical schools made a large contribution to the teaching staff for these courses. No fee was charged in the majority of instances. The War Sessions of the American College of Surgeons attracted about 17,000 physicians. The attendance reported for other opportunities was 3,955.

In 1943 sixteen states offered this type of instruction in more than eighty centers, with an attendance of 4,500. Transportation and other difficulties greatly curtailed the sponsoring of these courses itinerant in nature, but while they were limited to eight states last year, exclusive of the war sessions of the American College of Surgeons, the increasing recognition of their value was evidenced in that 3,955 attended courses in sixty-seven centers in these eight states.

Two hundred physicians enrolled for the home study course conducted by the American Academy of Ophthalmology and Otolaryngology last year.

Altogether, opportunities were made available on general medical subjects in cities in or near their home communities to 20,955 physicians.

In centers where ample clinical facilities are available, 382 graduate courses of less than one year's duration were offered in nineteen states and the District of Columbia. These states and the number of courses which were given in each of these states during 1943-1944 are as follows:

Alabama	1	Michigan	24
California	14	Mississippi	1
District of Columbia	2	New Jersey	2
Georgia	1	New York	242
Illinois	24	North Carolina	1
Indiana	2	Ohio	2
Kansas	11	Pennsylvania	10
Kentucky	1	South Carolina	1
Louisiana	14	Texas	1
Massachusetts	26	Virginia	2

Seventy-seven agencies or combinations of agencies participated in the planning of the programs. Three graduate schools of medicine played the most prominent part in offering courses of this nature. Seventeen undergraduate medical schools have given such courses. Seven state medical societies independently or in collaboration with state health departments planned courses for physicians of the state. Six state health departments and four city or county medical societies made contributions. In eight instances hospitals were the agencies offering short periods of study. Other sponsors included thirteen special societies, the American College of Physicians, National Foundation for Infantile Paralysis, Institute for Psychoanalysis in Chicago, Rutgers University, American Institute for Psychoanalysis, Trudeau School of Tuberculosis, Horace H. and Mary A. Rackham Fund, Lillia Babbit Hyde Foundation and the Commonwealth Fund. Government agencies included the United States Public Health Service, the office of the Surgeon General of the United States Army, the Federal Security Agency and the office of the Coordinator of Inter-American Affairs.

While the majority of the courses were in various subjects as the demand seemed apparent, specific courses in neurology and psychiatry were offered in fifty-three instances, ophthalmology in thirty-three, general medicine in twenty-seven, obstetrics and gynecology in twenty-three, general surgery in twenty-two, cardiovascular-renal diseases in nineteen, otolaryngology in eighteen, dermatology and syphilology in seventeen, electrocardiology and radiology fourteen each and gastroenterology in thirteen. Fewer than ten courses were offered in allergy, anatomy, anesthesia, arthritis, bronchoscopy, cystoscopy and endoscopy, chemistry, chest diseases, diabetes, electroencephalography, endocrinology, industrial medicine, internal medicine, hematology, infantile paralysis, legal medicine, nutrition, otorhinolaryngology, orthopedics, parasitology, pathology, pediatrics, physical therapy, physiology, plastic surgery, proctology, therapeutics, tropical medicine, urology, venereal disease control and war medicine.

The description of these intensive courses gave evidence that the type of instruction was both clinical and didactic. In presenting graduate courses medical school facilities were used for 194 courses, hospitals for 230 and clinics for 127. In many instances two or all three of these sources were used in presenting an individual course. Hotels and other facilities were used for 26 courses. The faculties of the medical schools served as instructors in 249 courses. Additional instructors were specialists in their fields chosen mainly from physicians residing within the state in which the course was given but including as well

physicians from outside the state. The duration of study in centers with clinical facilities varied from ten hours to one year. Many courses were of five days and one, two, four, six and eight weeks' duration as well as ten and twelve weeks and two months. Sixteen were courses of longer than three months, and one was a year's course. Courses were offered during every month last year and in thirty-eight instances they were arranged to suit the convenience of physician-students. Sixty-five courses were available for specialists only. Fees ranged from 50 cents to $800. For seventeen courses no fee was charged, while in eight medical officers paid no fees or a nominal fee. The attendance reported for 364 of these courses was 8,888. Eighteen did not record attendance. This figure approximates that reported in 1943 for 440 similar courses.

Clinical conferences and graduate assemblies of less than five days were held in fourteen states and the District of Columbia as follows:

Colorado	New York
Connecticut	Ohio
District of Columbia	Pennsylvania
Illinois	South Carolina
Lousiana	Texas
Michigan	Virginia
Missouri	Wisconsin
Nebraska	

Thirty-one such opportunities were offered. This type of study was sponsored by four medical schools, six state medical societies, nine city or county medical societies, twenty-six special societies, one hospital and the United States Public Health Service. Study courses in a variety of subjects were offered. The assemblies were held in centers with facilities for clinical and practical work and for scientific exhibits. In addition the American College of Physicians held wartime regional meetings in a number of states. Instruction was both didactic and clinical. The instructors included physicians residing in the state where the assembly was held, physicians from other states and members of the professorial faculties of medical schools. One or more of these assemblies was given in every month last year. Registration fees ranged from no fee in fifteen instances to $10. The total recorded attendance was 16,718. In 1943 the attendance for fifty-two such opportunities was 15,301.

For all three types of training offered during 1943-1944 the attendance was greater than the previous year, when more individual opportunities were available throughout the country, indicating increasing recognition of this refresher type of training. Altogether 46,561 physicians were interested in some form of graduate education last year. This figure excludes physicians who were enrolled for courses of longer than a year's duration as well as those serving internships and residencies and physicians who attended the Wartime Graduate Medical Meetings.

WARTIME GRADUATE MEDICAL MEETINGS

Under the auspices of a committee representing the American Medical Association, the American College of Physicians and the American College of Surgeons, a series of Wartime Graduate Medical Meetings has been held. These programs have been organized for physicians in the Army, Navy and Public Health Service and for physicians in civilian life who are resident within reasonable traveling distance of the camps and hospitals in which these postgraduate opportunities are offered. For organizational purposes the country has been divided into twenty-four sections, and key committees of three men have been appointed in each section to carry on the details of the program. In order to insure the best results a group of qualified authorities has been designated to serve as national consultants in the various special fields. Likewise the Surgeon Generals of the Army, Navy and Public Health Service have appointed a committee of three, one man from each organization, to collaborate in the work of administration.

From July 1, 1943 to June 30, 1944 there have been 199 programs. Ninety-five of these were continuation courses in which meetings were held at the same installation at regular intervals. The total number of daily sessions of all wartime graduate medical meetings during this year was 952. Programs have been conducted in forty-one states and in Canada. Attendance has not been reported routinely, but it is estimated that well over 30,000 physicians have profited by these meetings. It is not possible to determine what proportion were military or civilian doctors. In the near future the committee in charge of the Wartime Graduate Medical Meetings will meet with the Committee on Postwar Medical Service to consider plans for the future, which will naturally depend on military events.

EXAMINING BOARDS IN THE MEDICAL SPECIALTIES

In 1933 the Council on Medical Education and Hospitals was instructed by the House of Delegates of the American Medical Association to formulate minimal essentials deemed necessary for certification as a specialist. Prior to 1934 there were five examining boards in the medical specialties functioning. Other boards were later organized, and since 1940 fifteen boards have been in operation. All these boards are fully approved by the Council.

The Council's "Essentials of Approved Examining Boards in Medical Specialties" outlines the type of organization and the responsibilities of such boards as well as the minimum qualifications deemed necessary for the certification of a specialist. Such qualifications include graduation from an approved medical school, completion of an internship in a hospital approved by the Council, three additional years of special training in institutions approved by the Council and the board concerned, and a further period of two years devoted to specialty study and/or practice. Some boards require more than this minimum training. Each board has published a booklet containing a brief statement regarding its organization, personnel, purposes and requirements for certification. A statement of these requirements for each board was given in detail in the 1942 Educational Number of THE JOURNAL.

The Advisory Board for Medical Specialties was organized in 1933-1934 to coordinate graduate edu-

TABLE 28.—*Approved Examining Boards in Medical Specialties*

Key No.	Name of Board	Year of Incorporation	Total Certificates Awarded to March 1, 1943	Total Certificates Awarded to March 30, 1944
A. B. 1.	American Board of Pediatrics..... Pres., Edward B. Shaw., 384 Post St., San Francisco, Calif. Sec., C. A. Aldrich, 115½ First Ave. S.W., Rochester, Minn.	1933	2,058	2,220
A. B. 2.	American Board of Psychiatry and Neurology ..... Act. Pres., Hans A. Reese, Wisconsin General Hospital, Madison, Wis. Sec., Walter Freeman, 1028 Connecticut Ave., N.W., Washington, D. C.	1934	1,536	1,716
A. B. 3.	American Board of Orthopaedic Surgery ..... Pres., Frank D. Dickson, 1400 Professional Bldg., Kansas City, Mo. Sec., Guy A. Caldwell, 3503 Prytania St., New Orleans, La.	1934	819	869
A. B. 4.	American Board of Dermatology and Syphilology ..... Pres., Howard Fox, 140 E. 54th St., New York City, N. Y. Sec., George M. Lewis, 121 E. 60th St., New York City, N. Y.	1932	644	680
A. B. 5.	American Board of Radiology..... Pres., John W. Pierson, 1107 St. Paul St., Baltimore, Md. Sec., Byrl R. Kirklin, 102-110 Second Ave. S.W., Rochester, Minn.	1934	1,881	2,012
A. B. 6.	American Board of Urology..... Acting Pres. and Sec., Gilbert J. Thomas, 1409 Willow St., Minneapolis, Minn.	1935	942	983
A. B. 7.	American Board of Obstetrics and Gynecology ..... Pres., W. T. Dannreuther, 580 Park Ave., New York City, N. Y. Sec., Paul Titus, 1015 Highland Bldg., Pittsburgh, Pa.	1930	1,656	1,764
A. B. 8.	American Board of Internal Medicine Chairman, Reginald Fitz, 319 Longwood Ave., Boston, Mass. Asst. Sec., W. A. Werrell, 1301 University Ave., Madison, Wis.	1936	2,905	3,263
A. B. 9.	American Board of Pathology..... Pres., Arthur H. Sanford, 102 Second Ave. S.W., Rochester, Minn. Sec., F. W., Hartman, Henry Ford Hospital, Detroit, Mich.	1936	954	1,012
A. B. 10.	American Board of Ophthalmology.. Chairman, John Green, 3720 Washington Blvd., St. Louis, Mo. Sec., S. Judd Beach, 56 Ivie Rd., Cape Cottage, Me.	1917	2,198	2,336
A. B. 11.	American Board of Otolaryngology Pres., Harris P. Mosher, 127 Front St., Marblehead, Mass. Sec., Dean M. Lierle, University Hospital, Iowa City, Ia.	1924	3,570	3,737
A. B. 12.	American Board of Surgery..... Chairman, Arthur W. Elting, 119 Washington Ave., Albany, N. Y. Sec., J. S. Rodman, 225 S. 15th St., Philadelphia, Pa.	1937	2,144	2,342
A. B. 13.	American Board of Anesthesiology.. Pres., H. Boyd Stewart, 27th Place, Tulsa, Okla. Sec., Paul M. Wood, 745 Fifth Ave., New York City, N. Y.	1938	188	231
A. B. 14.	American Board of Plastic Surgery. Chairman, John S. Davis, 135 E. 65th St., Baltimore, Md. Sec., James B. Brown, 400 Metropolitan Bldg., St. Louis, Mo.	1937	154	160
A. B. 15.	American Board of Neurological Surgery ..... Chairman, Howard C. Naffziger, 384 Post St., San Francisco, Calif. Sec., Paul C. Bucy, 912 S. Wood St., Chicago, Ill. Advisory Board for Medical Specialties Pres., Willard C. Rappleye, 630 W. 168th St., New York City, N. Y. Sec., Byrl R. Kirklin, 102-110 Second Ave. S.W., Rochester, Minn.	1940	50	149
	Totals.....		21,699	23,465

Certification in the subspecialties: By the American Board of Internal Medicine: allergy 71, cardiovascular disease 310, gastroenterology 149, tuberculosis 128, total 658. By the American Board of Surgery: proctology 70. Total certified in the subspecialties, 728. These figures are included in the above tabulation.

cation and certification of medical specialists in the United States and Canada. This board reports directly to its member groups and functions in close cooperation with the Council on Medical Education and Hospitals of the American Medical Association.

The American Board of Internal Medicine by special examination certifies specialists in allergy, cardiovascular disease, gastroenterology and tuberculosis. Similarly the American Board of Surgery certifies specialists in proctology. Regular board certification is a prerequisite for certification in the subspecialty.

A list of the Specialty Boards and their officers and the number of certificates awarded prior to March 1, 1943 and the number certified to March 30, 1944, respectively, appear in table 28. On March 1, 1943 there were 21,699 physicians certified by the fifteen specialty boards, and in the following year 1,766 were certified. On March 30, 1944 a total of 23,465 certificates had been issued.

Included in these figures are 728 who have been certified in the following subspecialties: allergy 71, cardiovascular disease 310, gastroenterology 149, proctology 70 and tuberculosis 128.

In internal medicine 3,263 have been certified and in general surgery 2,342. However, the greatest number in any one specialty certified was in otolaryngology. In this specialty 3,737 have received the board's certificate since the organization of this board in 1924. The board in ophthalmology, organized in 1917 and the oldest board in existence, has to date certified 2,336. There has been a tripling in the past year in the number certified in neurologic surgery, which was formulated in 1940 and is the last board organized.

A key number has been assigned to each approved specialty board, such as A. B. 1, and the biographic records of physicians published in the American Medical Directory include by this means reference to those certified by these boards.

The 9-9-9 program curtails the training of numbers of young physicians desiring specialty certification. Under this wartime program the various boards will probably allow credit for the actual time spent by the candidate in house officer training in approved hospitals.

The majority of the boards will grant some credit for military service which will compensate in part for the interruption of the graduate training of physicians by military exigencies. The policies adopted by the specialty boards vary considerably. One grants an indefinite amount of credit, to be determined by an evaluation of the experience of individual applicants. Another grants full credit for work done in the surgical division of a regularly constituted army or naval hospital. Most boards limit the credit allowed to one year of training and/or one year of experience. The special provisions for military medical credit made by each board were published in the 1943 Educational Number of THE JOURNAL.

Prospective applicants who are in military services should obtain a copy of the "Record of Professional Assignments for Prospective Applicants for Certification by Specialty Boards" from the secretary of any board. This booklet describes procedures pertaining to military credit and will enable prospective applicants and candidates to keep an accurate account of work done in the military service and will constitute part of the credentials to be submitted to the board on application for certification.

APPROVED MEDICAL SCHOOLS

ARKANSAS

Little Rock

UNIVERSITY OF ARKANSAS SCHOOL OF MEDICINE, 1209 McAlmont Street.—Organized in 1879 as the Medical Department of Arkansas Industrial University. Present title in 1899. In 1911 the College of Physicians and Surgeons united with it and it became an integral part of the University of Arkansas. The first class was graduated in 1880. Clinical teaching was suspended in 1918 but resumed in 1923. Coeducational since organization. The faculty consists of 30 professors and 117 lecturers and instructors, a total of 147. The curriculum covers four sessions of nine months each. Entrance requirements are two years of collegiate work. The B.S. Degree is conferred at the end of the second year. An accelerated program was adopted July 1, 1943, involving the admittance and graduation of a class approximately every nine months. The fees for the four years for residents of Arkansas are $280 per year; nonresidents are charged $225 additional each year. The registration for 1943-1944 was 279, graduates 60. The present session began April 3, 1944, and will end Dec. 18, 1944. The subsequent session will begin Jan. 2, 1945. The Dean is Byron L. Robinson, M.D.

CALIFORNIA

Berkeley-San Francisco 22

UNIVERSITY OF CALIFORNIA MEDICAL SCHOOL, University Campus, Berkeley; Medical Center, San Francisco.—Organized in 1864 as the Toland Medical College. The first class graduated in 1864. In 1873 it became the Medical Department of the University of California. In 1909, by legislative enactment, the College of Medicine of the University of Southern California, at Los Angeles, became a clinical department but was changed to a graduate school in 1914. In 1915 the Hahnemann Medical College of the Pacific was merged, and elective chairs in homeopathic materia medica, and therapeutics were provided. Coeducational since organization. Three years of collegiate work are required for admission. The work of the first year is given at Berkeley and that of the last three years at San Francisco. An accelerated program has been adopted consisting of three terms of sixteen weeks in each academic year. The medical course may now be completed in three years. The faculty is composed of 181 professors and 314 associates and assistants, a total of 495. The fees average $318 per academic year; nonresidents are charged $250 additional each year. The registration for 1943 was 282; graduates, 65. The last session began November 1, 1943, and ended June 24, 1944. The present session began June 30, 1944. The Dean is Francis Scott Smyth, M.D., San Francisco.

Loma Linda-Los Angeles 33

COLLEGE OF MEDICAL EVANGELISTS, Loma Linda; Boyle and Michigan Avenues, Los Angeles.—Organized in 1909. The first class graduated in 1914. The laboratory departments are at Loma Linda; the clinical departments at Los Angeles. Coeducational since organization. Three years of collegiate work are required for admission. The faculty is composed of 43 professors and 376 associate professors, assistant professors, instructors and assistants—making a total of 419. The course covers a period of three years of four nine-month academic sessions and an additional twelve-month (nine-month for military personnel) internship in an approved hospital. The total fees are, respectively, $602, $590, $612 and $620. The registration for 1943-1944 was 335; graduates 67. The present session for the freshmen and sophomore students began on Mar. 31 and will end December 21, 1944; the present sessions for the junior and senior students began on January 2 and will end September 24, 1944. The subsequent freshman session will begin Dec. 29, 1944. The President is Walter E. Macpherson, M.D., Los Angeles. The Dean is Newton G. Evans, M.D., Loma Linda. The Associate Dean is W. F. Norwood, Ph.D., Los Angeles.

Los Angeles 7

UNIVERSITY OF SOUTHERN CALIFORNIA SCHOOL OF MEDICINE, 3551 University Avenue. Organized in 1895 as the University of Southern California College of Medicine. First class graduated in 1888. In 1908 it became the Los Angeles Medical Department of the University of California. In 1909 the College of Physicians and Surgeons, established in 1904, became the Medical Department of the University of Southern California. Its activities were suspended in 1920; reorganized in May 1928, under present title. Entrance requirements are approximately 90 semester hours. During present national emergency will operate the year round on accelerated three term basis, each term continuing for sixteen weeks. The faculty consists of 189 professors, associate professors and assistant professors and 241 instructors, assistants and lecturers—a total of 430, 147 of whom are now on active duty with the armed forces. An internship is required for graduation. Coeducational since organization. Annual fees (1½ academic years) amount to $852. The registration for 1943-1944 was 238, graduates 49. The present session began March 6, 1944 and will end October 1944. The subsequent session begins October 30, 1944. The Dean is Burrell O. Raulston, M.D.

Stanford University-San Francisco

STANFORD UNIVERSITY SCHOOL OF MEDICINE, University Campus, Stanford University; 2398 Sacramento Street, San Francisco. The main buildings are in San Francisco. The laboratories of anatomy, bacteriology and experimental pathology, chemistry, and physiology are located on the campus at Stanford University, which is thirty miles southeast of San Francisco adjoining the City of Palo Alto. The post office is Stanford University. Organized in 1908, when by agreement the interests of Cooper Medical College were taken over. The first class graduated in 1913. Coeducational since organization. The faculty consists of 138 professors and 190 lecturers, assistants and others, a total of 328. Two years of collegiate work are required for admission. The quarter plan is in operation admitting one class each nine months. An internship is a requirement for graduation. The fees for the four years, respectively, are $474, $438, $418 and $418. The registration for 1943-44 was 242; graduates, 56. During 1944-45 the quarters begin October 9th, January 8th, April 9th, and July 9th. The Dean is Loren Roscoe Chandler, M.D.

COLORADO

Denver

UNIVERSITY OF COLORADO SCHOOL OF MEDICINE, 4200 East Ninth Avenue.—Organized in 1883. Classes were graduated in 1885 and in all subsequent years except 1898 and 1899. Denver and Gross College of Medicine was merged Jan. 1, 1911. Coeducational since organization. The faculty is composed of 57 professors and 130 lecturers, instructors and assistants, a total of 187. The accelerated program has been adopted involving the admittance and graduation of a class approximately every nine months. The entrance requirements for nonmilitary students are three years of collegiate work. The fees average $289 per academic year. Nonresidents are charged $245 additional each year. The registration for 1943 was 235, graduates 56. The present session began Jan. 3, 1944 and will end Sept. 19, 1944. The subsequent session will begin Oct. 2, 1944. The Dean is Maurice H. Rees, M.D.

CONNECTICUT

New Haven

YALE UNIVERSITY SCHOOL OF MEDICINE, 333 Cedar Street.—Chartered in 1810 as the Medical Institution of Yale College. Organized in 1812; instruction began in 1813; first class graduated in 1814. A new charter in 1879 changed the name to the Medical Department of Yale College. In 1884, the Connecticut Medical Society surrendered such authority as had been granted by the first charter. In 1887, Yale College became Yale University. Coeducational since 1916. The faculty consists of 196 professors and 159 lecturers and assistants, a total of 355. Of this number, 28 are on leave of absence for war service and about 100 others have entered the armed forces upon completion of or during appointments. The requirements for admission are three years of collegiate work. An accelerated program has been adopted involving the admittance and graduation of a class every nine months. The fees average $506 per academic year. The registration for 1943 (April to December) was 223; graduates, 49. The present session began December 27, 1943 and will end September 16, 1944. The subsequent session will begin September 25, 1944. The Dean is Francis G. Blake, M.D.

DISTRICT OF COLUMBIA

Washington

GEORGETOWN UNIVERSITY SCHOOL OF MEDICINE, 3900 Reservoir Road, N.W.—Organized in 1851. First class graduated in 1852. The faculty is composed of 56 professors, 48 associate professors, 16 assistant professors, 13 adjunct professors and 145 instructors, a total of 278, of whom 72 are on military leave. Minimum requirements for admission are the complete premedical Army Specialized Training Program or Navy College Training Program. Civilian students must finish at least two full years of premedical work in an approved college of arts and sciences. The accelerated program permits admission and graduation of a class every nine months. The fees average $520 per academic year. Registration for 1943 was 318, graduates 63. The current session began January 3, 1944 and will close September 16, 1944. The next session will begin October 9, 1944. The Dean is David V. McCauley, S.J., Ph.D.

GEORGE WASHINGTON UNIVERSITY SCHOOL OF MEDICINE, 1335 H Street, N.W.—Organized in 1825 as the Medical Department of Columbian College. Also authorized to use the name National Medical College. Classes were graduated in 1826 and in all subsequent years except in 1834 to 1838, and 1861 to 1863, inclusive. The original title was changed to Medical Department of Columbian University in 1873. In 1903 it absorbed the National University Medical Department. In 1904, by an Act of Congress, the title of George Washington University was granted to the institution. Coeducational since 1884. The faculty is

composed of 81 professors and 150 instructors, demonstrators and assistants, a total of 231. Sixty semester hours of collegiate work are required for admission. An accelerated program has been adopted involving the admittance and graduation of a class every nine months. The fees average $550 per academic year. The registration for 1943 was 294; graduates, 65. The present session began November 22, 1943 and will end September 19, 1944. The subsequent session will begin September 18, 1944. The Dean is Walter A. Bloedorn, M.D.

HOWARD UNIVERSITY COLLEGE OF MEDICINE, Fifth and W. Streets, N.W.—Chartered in 1867. Organized in 1869. The first class graduated in 1871. Coeducational since organization. Negro students compose a majority of those in attendance. The faculty comprises 37 professors and 64 instructors and assistants, a total of 101. The admission requirements are at least two years of collegiate work. The course covers four years of thirty-three weeks each. Under our present accelerated program this work can be completed in three calendar years. The fees are, respectively, $269.00, $269.00, $259.00 and $266.00. Registration for 1943-1944 was 257; graduates, 48. The curriculum was accelerated with the beginning class of September 1942. The present class was admitted March 25, 1944 and will end Dec. 22, 1944. The subsequent session will begin Dec. 28, 1944. The Dean is John W. Lawlah, M.D.

GEORGIA

Atlanta 3

EMORY UNIVERSITY SCHOOL OF MEDICINE, 50 Armstrong Street—Organized in 1854 as the Atlanta Medical College. Classes graduated 1855 to 1861, when it suspended. Reorganized in 1865. A class graduated in 1865 and each subsequent year except 1874. In 1898 it merged with the Southern Medical College (organized in 1878), taking the name of Atlanta College of Physicians and Surgeons. In 1913 it merged with Atlanta School of Medicine (organized in 1905), reassuming the name of Atlanta Medical College. Became the Medical Department of Emory University in 1915; assumed present title in 1917. For civilian students three years of collegiate work are required for admission. Students in the armed services are admitted in accordance with regulations set up by them. The course of study is four academic years of thirty-two weeks each. By the use of the long summer vacation as a teaching quarter, the time required for the completion of these four academic years has been reduced from four to three calendar years. This is in line with the accelerated program adopted by most medical schools during the present emergency. The fees for each of the four academic years are $400. The registration for 1943 was 239; graduates, 50. Classes this year began on Jan. 3, 1944 and will end Sept. 16, 1944. The subsequent session will begin Oct. 2, 1944. The Dean is Russell H. Oppenheimer, M.D.

Augusta

UNIVERSITY OF GEORGIA SCHOOL OF MEDICINE, University Place.—Organized in 1828 as the Medical Academy of Georgia, the name being changed to the Medical College of Georgia in 1829. After 1873 it was known as the Medical Department of the University of Georgia. On July 1, 1933, the name was changed to the University of Georgia School of Medicine. Property transferred to the University in 1911. Classes were graduated in 1833 and all subsequent years except 1862 and 1863. Coeducation was begun in 1920. The faculty includes 30 professors and 67 associate and assistant professors, instructors, lecturers and assistants, a total of 97. Of this number 17 are on military leave. Three years of collegiate work are required for admission (except that for the duration of the present war the minimum requirement will be two years). An accelerated program has been adopted involving the admittance and graduation of a class approximately every nine months. The fees average $225 per academic year for residents of Georgia; nonresidents, $445. The registration for 1943 was 259; graduates, 45. The present session began January 3, 1944 and will end September 11, 1944. The subsequent session will begin September 27, 1944. The Dean is G. Lombard Kelly, M.D.

ILLINOIS

Chicago

LOYOLA UNIVERSITY SCHOOL OF MEDICINE, 706 South Wolcott Avenue.—Organized in 1915 by acquisition of Bennett Medical College, which had been organized in 1869. Facilities enlarged upon by acquisition of Chicago College of Medicine and Surgery, faculties in basic medical sciences put on full time basis and present title assumed in 1917. Operated as an organic part of Loyola University. Coeducational since organization. The faculty is composed of 19 full time professors and 329 associate and assistant professors, associates, instructors and assistants, a total of 348. Sixty semester hours of collegiate work are required for admission. The fees average $515.00 per academic year. The registration for 1943 was 312; graduates, 70. The present session began on January 10, 1944 and will end September 23, 1944. The subsequent session will begin October 2, 1944. The Dean is Italo F. Volini, M.D.

NORTHWESTERN UNIVERSITY MEDICAL SCHOOL, 303 East Chicago Avenue.—Organized in 1859 as the Medical Department of Lind University. First class graduated in 1860. In 1864 it became independent as the Chicago Medical College. It united with Northwestern University in 1869 but retained the name of Chicago Medical College until 1891, when the present title was taken. Became an integral part of Northwestern University in 1905. Coeducational since 1926. The faculty comprises 28 professors, 147 associate and assistant professors and 433 associates, instructors and clinical assistants, a total of 608. For the duration of the war the requirement for admission is two years of collegiate work. The B.S. in medicine degree may be conferred before the end of the senior year. An accelerated program has been adopted involving the acceptance of a class every nine months. A hospital internship is required for graduation. The total fees are $414 each year. The registration for 1943 was 590; graduates, 161. The present session began December 28, 1943 and will end September 16, 1944. The subsequent session will begin September 27, 1944. The Dean is J. Roscoe Miller, M.D.

UNIVERSITY OF CHICAGO, THE SCHOOL OF MEDICINE, Fifty-Eighth Street and Ellis Avenue.—Organized in 1924, as a part of the Ogden Graduate School of Science of the University of Chicago. In 1932, when the University of Chicago reorganized its departments, the medical departments were included in the Biological Sciences Division. The work of the first two years in the medical courses has been given on the University Quadrangles since 1899; but the last two years were offered only at Rush Medical College which was affiliated with the university until 1927 when actual work in the clinical departments on the campus began. After that time, candidates for the degree of Doctor of Medicine could take the work of the first two years on the campus and the work of the third and fourth years either on the campus or at the Rush Medical College. In June 1940 Rush Medical College became affiliated with the University of Illinois College of Medicine. All undergraduate instruction is now given only on the campus of the University of Chicago. The faculty of the School of Medicine is composed of 90 professors, 125 associates, instructors and others, a total of 215. The requirements for admission are 80 semester hours of collegiate work or completion of the Army or Navy premedical program, whether or not the applicant is actually in the Army or Navy. The B.S. degree may be obtained during the second year. The curriculum covers twelve quarters of work. Sixty-five students are admitted to the first year class every nine months. The tuition fee averages $450. The registration for 1943 was 271; graduates, 72. Quarters begin in March, June, September and December of each year. All correspondence relating to general policies should be addressed to A. C. Bachmeyer, M.D., Associate Dean of the Division of Biological Sciences, and that pertaining to student affairs to F. J. Mullin, Assistant Dean of Students.

UNIVERSITY OF ILLINOIS COLLEGE OF MEDICINE, 1853 West Polk Street, Zone 12.—Organized in 1882 as the College of Physicians and Surgeons. The first class graduated in 1883. It became the Medical Department of the University of Illinois by affiliation in 1897. Relationship with the university was canceled in June 1912, and was restored in March 1913, when the present title was assumed. The staff of the Rush Medical College was incorporated in the University of Illinois College of Medicine in 1942 and at the same time Presbyterian Hospital, Chicago, became a teaching unit of the university. Coeducational since 1898. Two years of collegiate work are required for admission. The accelerated program has been adopted involving the admittance and graduation of a class approximately every nine months. The B.S. in medicine degree is conferred at the end of the second year. The faculty is composed of 250 professors and 250 associates, instructors and assistants, a total of 500. The fees for residents of Illinois average $288 per academic year; nonresidents pay an additional fee of $150. The registration for 1943-1944 was 676; graduates, 161. The present session began April 3, 1944 and will end December 15, 1944. The subsequent session will begin Jan. 2, 1945. The Dean is Raymond B. Allen, M.D.

INDIANA

Bloomington-Indianapolis

INDIANA UNIVERSITY SCHOOL OF MEDICINE, Bloomington; 1040 West Michigan Street, Indianapolis.—Organized in 1903 but did not give all the work of the first two years of the medical course until 1905. In 1907, by union with the State College of Physicians and Surgeons, the complete course in medicine was offered. In 1908 the Indiana Medical College, which was formed in 1905 by the merger of the Medical College of Indiana (organized in 1878), the Central College of Physicians and Surgeons (organized in 1879), and the Fort Wayne College of Medicine (organized in 1879) merged into it. The first class was graduated in 1908. Coeducational since organization. The faculty consists of 334 professors, lecturers, associates and assistants. The B.S. degree in anatomy and physiology is conferred. The school has been on an all-time program since May 11, 1942. Three years of college work are required for admission. Each calendar year is divided into three semesters. The work given in two semesters is equivalent to the work formerly given in a year. The work of the first two semesters is given at Bloomington; the remainder of the work at Indianapolis. Regular fee for two semesters of work is $217 for residents of Indiana and $422 for nonresidents. The registration for the session 1943 was 506; graduates, 124. The next regular class will start work on January 1, 1945. The Dean is Willis D. Gatch, M.D., Indianapolis.

IOWA

Iowa City

STATE UNIVERSITY OF IOWA COLLEGE OF MEDICINE, University Campus.—Organized in 1869. First session began in 1870. First class graduated in 1871. Absorbed Drake University College of Medicine in 1913. Coeducational since 1870. The faculty is made up of 56 profes-

sors, 74 lecturers, demonstrators and assistants, a total of 130. Three years of collegiate work are required for admission. The B.A. degree in the combined course of liberal arts and medicine is conferred. An accelerated program has been adopted involving the admittance and graduation of a class approximately every nine months. The tuition fee is $226 each year for residents of Iowa and $490 for nonresidents. The registration for 1943 was 317; graduates, 64. The present session began January 3, 1944 and will end September 23, 1944. The subsequent session will begin October 2, 1944. The Dean is Ewen Murchison MacEwen, M.D.

KANSAS

Lawrence-Kansas City

UNIVERSITY OF KANSAS SCHOOL OF MEDICINE, Lawrence; 39th Street and Rainbow Boulevard, Kansas City.—Organized in 1880. It offered only the first two years of the medical course until 1905, when it merged with the Kansas City (Mo.) Medical College, founded in 1869, the College of Physicians and Surgeons, founded in 1894, and the Medico-Chirurgical College, founded in 1897. Absorbed Kansas Medical College in 1913. The first class graduated in 1906. The clinical courses are given at Kansas City. Coeducational since 1880. The faculty includes 64 professors and 125 instructors, assistants and others, a total of 189. The requirement for admission is three years of collegiate work. Students must have collegiate degree to enter sophomore year. The B.S. degree in medicine is conferred at the end of the second year. An accelerated program has been adopted involving the admittance and graduation of a class approximately every nine months. The fees for residents of the state average $229.50; nonresidents $439.50. The registration for 1943-1944 was 330; graduates, 83. The present session for freshmen began March 6, 1944. Upper classmen were enrolled Feb. 21, 1944 and will complete the year Oct. 30, 1944. The subsequent session will begin Oct. 30, 1944. The Dean is Harry R. Wahl, M.D., Kansas City.

KENTUCKY

Louisville 2

UNIVERSITY OF LOUISVILLE SCHOOL OF MEDICINE, 101 West Chestnut Street.—Organized in 1837 as Louisville Medical Institute. The first class graduated in 1838, and a class graduated each subsequent year except 1863. In 1846 the name was changed to University of Louisville Medical Department. In 1907 it absorbed the Kentucky University Medical Department; in 1908, the Louisville Medical College, the Hospital College of Medicine and the Kentucky School of Medicine. In 1922 it changed its name to the University of Louisville School of Medicine. Coeducational since organization. Two years of collegiate work are the minimum requirement for admission. Preference is given applicants with a degree or three college years leading to a degree. The faculty numbers 73 professors and 73 assistants, instructors and others, a total of 146. An accelerated program has been adopted involving the admittance and graduation of a class every nine months. Fees are $450 for residents of Louisville and Jefferson County and $550 for nonresidents, per school year. The registration for 1943 was 363; graduates, 88. The present session began January 5, 1944 and will end September 8, 1944. The subsequent session will begin September 27, 1944. The Dean is John Walker Moore, M.D.

LOUISIANA

New Orleans 13

LOUISIANA STATE UNIVERSITY SCHOOL OF MEDICINE, 1542 Tulane Avenue.—Organized January 1931 as Louisiana State University Medical Center. Present title in 1939. Coeducational. First session October 1931, with students of first and third year. Faculty comprises 28 professors and 77 associate professors, assistant professors, instructors and assistants, a total of 105. Course covers four sessions of not less than 32 weeks each. Under the accelerated program adopted for the duration of the war, a first year class will be admitted each year and the entire course will be completed within a period of three years from the date of admission. A minimum of three years collegiate work is required for admission. Total fees, $134 each year for residents of Louisiana; additional tuition of $400 each year for nonresidents. The registration for 1943 was 339; graduates, 79. The present session began January 11, 1944 and will end September 6, 1944. The subsequent session will begin September 27, 1944. The Dean is Beryl I. Burns, M.D.

TULANE UNIVERSITY OF LOUISIANA SCHOOL OF MEDICINE, 1430 Tulane Avenue.—Organized in 1834 as the Medical College of Louisiana. Classes were graduated in 1835 and in all subsequent years except 1863-1865, inclusive. It became the Medical Department of the Tulane University of Louisiana in 1884. Present title in 1913. Coeducational since 1915. The faculty comprises 34 professors and 240 associate and assistant professors, instructors and assistants, a total of 274. An accelerated program has been adopted involving the admittance of a class at the beginning of each tenth month, and the graduating of a class approximately every nine months. A minimum of three years of collegiate work is required for admission. Total fees average $547 per academic year. The registration for 1943-1944 was 529; graduates, 119. The present session began March 1, 1944 and will end October 14, 1944. The subsequent session will begin December 1, 1944. The Dean is Hiram W. Kostmayer, M.D.

MARYLAND

Baltimore

JOHNS HOPKINS UNIVERSITY SCHOOL OF MEDICINE, 710 North Washington Street.—The nucleus of a Medical Faculty was constituted in 1883. Systematic postgraduate instruction in pathology and bacteriology was begun in 1886. School was fully organized and opened in 1893. The first class graduated in 1897. Coeducational since organization. The faculty consists of 72 professors and 399 instructors, assistants and others, a total of 471. The requirement for admission is temporarily two college years. An accelerated program has been adopted involving the admittance and graduation of a class every nine months. The fees average $627 per academic year. The registration for 1943 was 295; graduates, 69. The present session began November 29, 1943 and will end August 18, 1944. The subsequent class will begin September 25, 1944. The Dean is Alan M. Chesney, M.D.

UNIVERSITY OF MARYLAND SCHOOL OF MEDICINE AND COLLEGE OF PHYSICIANS AND SURGEONS, Lombard and Greene Streets, Zone 1.—Organized in 1807 as the College of Medicine of Maryland. The first class graduated in 1810. In 1812 it became the University of Maryland School of Medicine. Baltimore Medical College was merged with it in 1913. In 1915 the College of Physicians and Surgeons of Baltimore was merged and the present name assumed. Coeducational since 1918. The faculty consists of 52 professors and 332 associate and assistant professors and others, a total of 384, of which 137 are now absent serving with the Armed Forces. Premedical college training reduced from three to two years for the duration of the war. The medical school is now running under an accelerated program for the duration of the war, and requires the admission of a freshman class approximately every nine months. The tuition fees average $501 for residents of the state; for nonresidents approximately $150 additional. The registration for the session 1943 was 371, graduates 90. Present session began January 13, 1944 and will end September 29, 1944. The next subsequent session will begin October 17, 1944. The Dean is Robert U. Patterson, M.D.

MASSACHUSETTS

Boston

BOSTON UNIVERSITY SCHOOL OF MEDICINE, 80 East Concord Street.—Organized in 1873 as a homeopathic institution. In 1874 the New England Female Medical College, founded in 1848, was merged into it. The first class was graduated in 1874. Became nonsectarian in 1918. Coeducational since organization. For the duration two years of collegiate work are required for admission. The normal requirement for admission is three years of college work. The faculty includes 23 professors, 212 associate and assistant professors, instructors and others, a total of 235. An accelerated program has been adopted involving the admittance and graduation of a class approximately every nine months. Total fees average $480 per year. The registration for 1943 was 248, graduates 46. The present session began December 31, 1943 and will end September 22, 1944. The subsequent session begins September 29, 1944. The Dean is Charles F. Branch, M.D.

HARVARD MEDICAL SCHOOL, 25 Shattuck Street, Zone 15.—Organized in 1782. The first class graduated in 1788. It has a faculty of 203 members, and 427 other instructors and assistants, a total of 630. Two years of collegiate work are required for admission. The accelerated program has been adopted involving the admittance and graduation of a class approximately every nine months. The fees average $420, plus $5 the first year for matriculation. The registration for 1943 was 526; graduates, 132. The present session began January 3, 1944 and will end September 25, 1944. The subsequent session begins October 2, 1944. The Dean is C. Sidney Burwell, M.D.

TUFTS COLLEGE MEDICAL SCHOOL, 416 Huntington Avenue.—Organized in 1893 as the Medical Department of Tufts College. The first class graduated in 1894. Coeducational since 1894. It has a faculty of 107 professors and 322 assistants, lecturers and others, a total of 429. Four academic years of college study are required for admission. An accelerated program has been adopted involving the admittance and graduation of a class approximately every nine months. The total fees for each of the four years, respectively, are $512, $507, $507 and $517. The registration for 1943 was 414; graduates, 98. The present session began Jan. 5, 1944 and will end September 1944. The subsequent class will begin Oct. 2, 1944. The Acting Dean is Dwight O'Hara, M.D.

MICHIGAN

Ann Arbor

UNIVERSITY OF MICHIGAN MEDICAL SCHOOL.—Organized in 1850 as the University of Michigan Department of Medicine and Surgery. The first class graduated in 1851. Present title assumed in 1915. Coeducational since 1870. It has a faculty of 28 professors, 19 associate professors, 31 assistant professors, 89 assistants, instructors and lecturers, a total of 167. The entrance requirements are ninety semester hours. An accelerated program has been adopted involving the admittance of a class annually and the graduation of a class every nine months. The fees average $250 per academic year; for nonresidents $400 a year. The registration for 1943-44 was 535; graduates, 118. The last freshman class began Nov. 1, 1943 and ended July 22, 1944. The next freshman class will begin Oct. 30, 1944. The Dean is A. C. Furstenberg, M.D.

Detroit

WAYNE UNIVERSITY COLLEGE OF MEDICINE, 1516 St. Antoine Street.—Organized as the Detroit College of Medicine in 1885 by consolidation of the Detroit Medical College (organized in 1868) and the Michigan College of Medicine (organized in 1879). Reorganized with the title of Detroit College of Medicine and Surgery in 1913. The first class graduated in 1869. In 1918 it became a municipal institution under the control of the Detroit Board of Education. In 1934 the name was changed by action of the Detroit Board of Education to Wayne University College of Medicine, as a part of the program of consolidation of the Detroit city colleges into a university system. Coeducational since 1917. Entrance requirement is 60 semester hours from an accredited college or university for the duration of the war. The faculty consists of 46 professors, 302 lecturers and others, a total of 348. An accelerated program has been adopted involving the admittance and graduation of a class approximately every nine months. The fees average $325 for Wayne County residents, and for nonresidents, $425. The registration for 1943 was 265; graduates, 58. The present session began January 3, 1944 and will end September 28, 1944. The subsequent session will begin October 2, 1944. The Dean is Edgar H. Norris, M.D.

MINNESOTA

Minneapolis

UNIVERSITY OF MINNESOTA MEDICAL SCHOOL, Zone 14.—Organized in 1883 as the University of Minnesota College of Medicine and Surgery, reorganized in 1888 by absorption of St. Paul Medical College and Minnesota Hospital College. The first class graduated in 1889. In 1908 the Minneapolis College of Physicians and Surgeons, organized in 1883, was merged. In 1909 the Homeopathic College of Medicine and Surgery was merged. Present title in 1913. Coeducational since organization. The faculty includes 219 professors, of whom 82 are on full time appointment and 137 on part time, and 152 instructors, 38 of whom are on full time appointment and 114 on part time, a total of 371. An accelerated program has been adopted involving the admittance and graduation of a class every nine months. The entrance requirements are three years of university work, which must include six semester credits of rhetoric, eight semester credits of physics; thirteen credits of general chemistry, qualitative and quantitative analysis, organic and physical chemistry; eight credits of general zoology and genetics and eugenics; four credits of general psychology, and a reading knowledge of scientific German, with a "C" average in all subjects and in the sciences. For the duration of the war entrance requirements have been reduced to two years of college work, and physical chemistry, genetics and eugenics, psychology, and German may be waived by the admission committee. Students are required to meet the requirements for a degree of B.S. or B.A. before receiving the degree of Bachelor of Medicine (M.B.), which is granted at the end of the course. The M.D. degree is conferred after a year of intern work, of advanced laboratory work, or of public health work has been completed. Total fees are $252 per academic year for residents and $477 for nonresidents. The registration for 1943 was 494; graduates, 108. The academic year 1944 began Jan. 4, 1944 and will end Aug. 26, 1944. The subsequent class will begin October 2, 1944. The Dean is Harold S. Diehl, M.D.

MISSOURI

St. Louis

ST. LOUIS UNIVERSITY SCHOOL OF MEDICINE, 1402 South Grand Boulevard, Zone 4.—Organized in 1901 as the Marion-Sims-Beaumont Medical College by union of Marion-Sims Medical College, organized in 1890, and Beaumont Hospital Medical College, organized in 1886. First class graduated in 1902. It became the Medical School of St. Louis University in 1903. The faculty is composed of 80 professors and 284 instructors and assistants, a total of 364. The completion of three years of college study is the minimum admission requirement but students presenting meritorious credits in excess of the minimum are accepted by preference. During the war period the minimal entrance requirements, however, are two years of college with 60 semester hours of credit. An accelerated program has been adopted involving the admittance and graduation of a class approximately every nine months. The fees average $536 per academic year. The registration for 1943 was 477; graduates, 107. The present session began November 22, 1943 and will end for freshmen, sophomores and juniors on September 2, 1944 and for seniors on September 21, 1944. The subsequent session begins for freshmen on August 28, 1944, and for sophomores, juniors and seniors on September 5, 1944. The Dean is Alphonse M. Schwitalla, S.J., Ph.D.

WASHINGTON UNIVERSITY SCHOOL OF MEDICINE, Kingshighway and Euclid Avenue, Zone 10.—Organized in 1842 as the Medical Department of St. Louis University. The first class graduated in 1843. In 1855 it was chartered as an independent institution under the name of St. Louis Medical College. In 1891 it became the Medical Department of Washington University. In 1899 it absorbed the Missouri Medical College. Coeducational since 1918. The faculty comprises 162 professors and 341 lecturers, instructors and others, a total of 503. For the duration of the war the entrance requirement has been reduced to two years of collegiate work. The B.S. degree in medicine is conferred at the end of the third or fourth year. An accelerated program has been adopted involving the admittance and graduation of a class approximately every nine months. The fees average $596. The registration for 1943 was 397; graduates, 110. The present session began January 3, 1944 and will end Sept. 12, 1944. The subsequent session begins October 5, 1944. The Dean is Philip A. Shaffer, Ph.D.

NEBRASKA

Omaha

CREIGHTON UNIVERSITY SCHOOL OF MEDICINE, 306 North Fourteenth Street, Zone 2.—Organized in 1892 as the John A. Creighton Medical College. The first class graduated in 1893. Present title in 1921. Coeducational since organization. It has a faculty of 79 professors and 76 instructors, lecturers and assistants, a total of 155. Sixty-four semester hours of collegiate work are required for admission. The B.S. degree in medicine is conferred at the end of the second year. An accelerated program has been adopted involving the admittance and graduation of a class approximately every nine months. The fees average $376 per academic year and $100 additional each year for students who had not taken the major part of their work at Creighton University. The registration for 1943 was 257; graduates, 59. The present session began Jan. 4, 1944 and will end Sept. 22, 1944. The subsequent session will begin Sept. 28, 1944. The Dean is Charles M. Wilhelmj, M.D.

UNIVERSITY OF NEBRASKA COLLEGE OF MEDICINE, Forty-Second Street and Dewey Avenue, Zone 5.—Organized in 1881 as the Omaha Medical College. The first class graduated in 1882. It became the Medical Department of Omaha University in 1891. In 1902 it affiliated with the University of Nebraska, with the present title. The instruction of the first two years was given at Lincoln and of the last two at Omaha until 1913, when the work of all four years was transferred to Omaha. Coeducational since 1882. The faculty is composed of 78 professors and 54 lecturers and instructors, a total of 132. Two years of collegiate work are required for admission. An accelerated program has been adopted involving the admittance and graduation of a class approximately every nine months. The B.S. degree in medicine is conferred at the end of the second year. The fees average $250 per academic year. The registration for 1943 was 340; graduates, 73. The present session began Jan. 3, 1944 and will end September 23, 1944. The subsequent session will begin October 2, 1944. The Dean is C. W. M. Poynter, M.D.

NEW YORK

Albany

ALBANY MEDICAL COLLEGE, 47 New Scotland Avenue.—Organized in 1838. The first class graduated in 1839. It became the Medical Department of Union University in 1873. In 1915 Union University assumed educational control. Coeducational since 1915. The faculty is composed of 93 professors and 109 instructors, assistants and others, a total of 202. The requirement for admission is three years of college work. For the duration students who have completed two years of college and who have the proper specific qualifications will be admitted. An accelerated program has been adopted involving the admittance and graduation of a class approximately every nine months. The fees average $532 per academic year. The registration for 1943 was 170; graduates, 38. The present session began January 3, 1944 and will end September 23, 1944. The subsequent session will begin October 2, 1944. The Dean is R. S. Cunningham, M.D.

Brooklyn 2

LONG ISLAND COLLEGE OF MEDICINE, 350 Henry Street.—Chartered in 1930, was originally organized in 1858 as The Long Island College Hospital. From the collegiate department the first class was graduated in 1860 and the last class in 1930. The first class of the Long Island College of Medicine was graduated in 1931. It is coeducational. It has a faculty of 104 professors, associate, assistant, clinical and assistant clinical professors, and 213 lecturers, associates, instructors, assistants, and others, a total of 317. For the duration of the war two years of collegiate work, including specified courses, are required for admission for men in the armed services; three years for civilians. The medical course covers four academic years but is being given in three calendar years for the duration of the war. The fees average $610 per academic year. The registration for 1943 was 413; graduates, 91. The present session began Jan. 3, 1944 and will end September 28, 1944. The subsequent session begins Oct. 2, 1944. The President and Dean is Jean A. Curran, M.D.

Buffalo

UNIVERSITY OF BUFFALO SCHOOL OF MEDICINE, 24 High Street.—Organized in 1846. The first class graduated in 1847. It absorbed the Medical Department of Niagara University in 1898. Coeducational since organization. The faculty is composed of 127 professors and 191 associates, assistants and others, a total of 318. The minimum requirement for admission is two years of collegiate work including certain prescribed science subjects. An accelerated program has been adopted admitting a freshman class every nine months. The fees for the entire course are $2,000. The registration for 1943-1944 was 295; graduates, 61. The present session for freshmen began April 3, 1944 and ends December 23, 1944. The subsequent session for freshmen begins January 2, 1945. The Dean is Edward W. Koch, M.D.

New York

COLUMBIA UNIVERSITY COLLEGE OF PHYSICIANS AND SURGEONS, 630 West One Hundred and Sixty-Eighth Street.—The medical faculty of Columbia College, then known as King's College, was organized in 1767. Instruction was interrupted by the War of the Revolution. The faculty was reestablished in 1792 and merged in 1814 with the College of Physicians and Surgeons, which had received an independent charter in 1807.

In 1860 the College of Physicians and Surgeons became the Medical Department of Columbia College. This merger became permanent by legislative enactment in 1891. Columbia College became Columbia University in 1896. The medical school has been coeducational since 1917. The faculty is composed of 320 professors and 609 instructors, demonstrators and others, a total of 929. Two years of collegiate work are required for admission. During the war, the school will remain in session throughout the year and entering classes will be enrolled once a year. Fees average $538 per academic year. The registration for 1943 was 466: graduates, 108. The present session began January 3, 1944 and will end September 28, 1944. The subsequent session begins October 5, 1944. The Dean is Willard C. Rappleye, M.D.

Cornell University Medical College, 1300 York Avenue.—Organized in 1898. Coeducational since organization. First year teaching was given formerly to approximately one third of the class at Ithaca but in 1938 this division was discontinued and all instruction is now in New York City. The faculty is composed of 155 professors and 223 instructors, assistants and others, a total of 378. All students admitted are from approved colleges for premedical training. The requirement for admission is three years of college work. An accelerated program has been adopted whereby a class graduates every nine months. The fees average $622 per academic year. The registration for 1943 was 319; graduates, 75. The present session began Jan. 3, 1944 and will end September 26, 1944. The subsequent session will begin September 28, 1944. The Dean is Joseph C. Hinsey, Ph.D.

New York Medical College, Flower and Fifth Avenue Hospitals, 1 East 105th Street.—Organized in 1858. Incorporated in 1860 as the Homeopathic Medical College of the State of New York. The title New York Homeopathic Medical College was assumed in 1869; the title New York Homeopathic Medical College and Hospital in 1887; the title New York Homeopathic Medical College and Flower Hospital in 1908; the title New York Medical College and Flower Hospital in 1936; the present title of New York Medical College, Flower and Fifth Avenue Hospitals, June 22, 1938. The first class graduated in 1861. Coeducational since 1919. Two years of college work are required for admission. An accelerated program has been adopted involving the admittance and graduation of a class approximately every nine months. It has a faculty of 105 professors and associate professors, 68 assistant professors, 305 lecturers and assistants, a total of 478. The fees average $683 per academic year. The registration for 1943 was 373; graduates, 83. The present session began January 3, 1944 and will end September 28, 1944. The subsequent session begins October 2, 1944. The President and Dean is J. A. W. Hetrick, M.D.

New York University College of Medicine, 477 First Avenue, Zone 16.—The Medical Department of New York University (then called the University of the City of New York) was organized in 1841. In 1898 it united with the Bellevue Hospital Medical College, organized in 1861, under the name of University and Bellevue Hospital Medical College. In 1935 the name was changed to New York University College of Medicine. Coeducational since 1919. The faculty is composed of 199 professors, associate, assistant, clinical, associate clinical and assistant clinical professors and 367 lecturers, instructors and others, a total of 566. An accelerated program has been adopted involving the admittance and graduation of a class approximately every nine months. Entrance requirements are two years of study in an approved college of arts and sciences. The fees average $600 per academic session. The registration for 1943 was 521; graduates, 121. The present session began January 3, 1944 and will end September 28, 1944. The subsequent session will begin October 4, 1944. The Acting Dean is Donal Sheehan, M.D.

Rochester 7

University of Rochester School of Medicine and Dentistry, 260 Crittenden Boulevard.—Organized in 1925 as the Medical Department of the University of Rochester. Coeducational since organization. The faculty is composed of 74 professors, 216 lecturers, assistants, instructors and others, a total of 290. An accelerated program has been adopted involving the admittance and graduation of a class approximately every nine months. For the duration of the national emergency, two years of collegiate work are required for admission. The fees average $500 per academic year. The registration for 1943 was 257; graduates, 63. The present session began January 3, 1944 and will end September 23, 1944. The subsequent session will begin October 2, 1944. The Dean is George H. Whipple, M.D.

Syracuse 10

Syracuse University College of Medicine, 766 Irving Avenue.—Organized in 1872, when the Geneva Medical College, chartered in 1834, was removed to Syracuse, under the title "The College of Physicians and Surgeons of Syracuse University." Present title assumed in 1875, when a compulsory three-year graded course was established. The first class graduated in 1873 and a class graduated each subsequent year. In 1889 the amalgamation with the university was made complete. Course extended to four years in 1896. Coeducational since organization. The faculty is composed of 62 professors and 188 associate and assistant professors, lecturers and instructors, a total of 250. Two years of a recognized college course are required for admission. An accelerated program has been adopted involving the completion of the four year course in three years; admitting a freshman class every nine months. The fees average $600 per academic year. The enrolment for 1943-44 was 194; graduates, 38. The present session for upper classmen began January 3, 1944 and will end September 1944 and for freshmen began April 1, 1944. The subsequent session will begin in January 1945 for first, second and third year students; October 1944 for fourth year students. The Dean is H. G. Weiskotten, M.D.

NORTH CAROLINA

Durham

Duke University School of Medicine.—Organized in 1925. The first class was admitted October 1, 1930. Coeducational. The faculty is composed of 13 professors and 141 associate and assistant professors, lecturers, instructors and assistants, a total of 154. The premedical requirement is three years of college work. The academic year consists of four quarters of twelve weeks each, which must be taken consecutively, with graduation in three calendar years. The B.S. degree in medicine may be conferred for special work after six quarters. Students are urged to spend three years in hospital or laboratory work after graduation and must give assurance satisfactory to the executive committee that they will spend at least two years. Active duty with the Army, Navy or Public Health Service can replace the second year. The fees are $450 for each year of three quarters. The registration for 1943 was 286; graduates, 60. During 1944-1945 the quarters begin January 3, April 3, July 3, October 2 and end March 25, June 24, September 23 and December 23. The first year students were enrolled January 3, 1944. The next freshman class will be enrolled October 2, 1944. The Dean is Wilburt C. Davison, M.D.

Winston-Salem 7

Bowman Gray School of Medicine of Wake Forest College.—Organized in 1902 at Wake Forest as a school offering only the first two years of the curriculum. In 1941 the school was moved to Winston-Salem and expanded to a complete four year medical school under its present name. Ninety semester hours of college work are required for admission. For the duration of the present war students may be admitted who have completed only sixty semester hours. The B.S. degree is given to those who on admission have completed ninety semester hours of academic work after the completion of the first year in the medical school. The next class will be admitted on September 27, 1944. The faculty numbers 119, 18 of whom are on leave of absence in active military service. Tuition for each academic session is $450. Registration for the session 1943 was 161; graduates, 27. The present session began January 3, 1944 and will end September 25, 1944. The subsequent session will begin September 27, 1944. The Dean is C. C. Carpenter, M.D.

OHIO

Cincinnati

University of Cincinnati College of Medicine, Eden and Bethesda Avenues.—Organized in 1909 by the union of the Medical College of Ohio (founded in 1819) with the Miami Medical College (founded in 1852). The Medical College of Ohio became the Medical Department of the University of Cincinnati in 1896. Under a similar agreement, March 2, 1909, the Miami Medical College also merged with the University when the title of Ohio-Miami Medical College of the University of Cincinnati was taken. Present title assumed in 1915. Coeducational since organization. Candidates for admission to the freshman class will be accepted in accordance with the Army and Navy plan for the training of medical students for the duration of the war. Liberal arts students of the University of Cincinnati may enroll for the seven year combined liberal arts and medical program. The B.S. degree is granted on the joint recommendation of the faculties of the College of Liberal Arts and Medicine at the end of the first medical year. The faculty consists of 112 professors, associate and assistant professors, 350 instructors, etc., a total of 462. During the period of the war emergency the college will operate on an accelerated program. A new class will be admitted every nine months. Tuition is as follows: for legal residents of Cincinnati $485 a year plus breakage fees ($50 additional for those not legal residents). Each session will consist of thirty-six weeks of work and there will be a short recess between the major sessions. The registration for 1943 was 325; graduates, 74. The present session began Dec. 13, 1943 and will end August 25, 1944. The subsequent class will be admitted Sept. 5, 1944. The Dean is Stanley Dorst, M.D.

Cleveland 6

Western Reserve University School of Medicine, 2109 Adelbert Road.—Organized in 1843 as the Cleveland Medical College in cooperation with Western Reserve College. The first class graduated in 1844. The school assumed the present title in 1881. In 1910 the Cleveland College of Physicians and Surgeons was merged. Coeducational since 1919. The faculty includes 102 professors and 270 lecturers, assistants and others, a total of 372. The curriculum covers four scholastic years of 38 to 40 weeks each. During the war emergency, these are spaced so that the entire course will be completed in three calender years. For the duration of the war, the entrance requirements have been reduced to two years of college work. The fees average $529 per academic year. The registration for 1943 was 317; graduates, 66. The present session began November 22, 1943, and will end on August 26, 1944, for the first three classes, and on September 25, 1944, for the fourth year class. The subsequent session will begin August 28, 1944. Webster G. Simon, Ph.D., is Acting Chairman of the Administrative Committee.

Columbus 10

Ohio State University College of Medicine, Neil and Eleventh Avenues.—Organized in 1907 as the Starling-Ohio Medical College by the union of Starling Medical College (organized in 1847 by charter granted by the State Legislature changing the name from Willoughby Medical College, which was chartered March 3, 1834) with the Ohio Medical University (organized 1890). In 1914 it became an integral part of the Ohio State University with its present title. Coeducational since organization. The faculty consists of 99 professors, associate and

assistant professors, 120 lecturers, instructors and assistants, a total of 219, of whom 77 are on military leave. Three years of collegiate work are required for admission. An accelerated program has been adopted involving the admittance and graduation of a class every nine months. Tuition fees average $318 per academic year and $150 additional for nonresidents. The registration for 1943 was 299; graduates, 66. The present session began Jan. 4, 1944 and will end Sept. 1, 1944. The subsequent session will begin Oct. 3, 1944. The Acting Dean is R. C. Baker, Ph.D.

OKLAHOMA

Oklahoma City 4

UNIVERSITY OF OKLAHOMA SCHOOL OF MEDICINE, 801 East Thirteenth Street.—Organized in 1900. Until 1910 gave only the first two years of the medical course at Norman, Okla., after which a clinical department was established at Oklahoma City by taking over the Medical School of Epworth University. The first class graduated in 1911. Coeducational since organization. A new medical school building and a second teaching hospital became available in 1928, and since September of that year the entire four year course has been given in Oklahoma City. It has a faculty of 28 professors, 24 associate professors, 26 assistant professors and 120 associates, lecturers, visiting lecturers, instructors and assistants, a total of 198. Two years of college work are a prerequisite for admission during the war. The course covers four years of nine months each. An accelerated program was adopted beginning May 10, 1943 involving admission and graduation of a class every nine months. Fees: $50 "maintenance and incidental fee" per semester. Other annual course fees average $128, $95, $53 and $58, in the order given, beginning with the freshman year. For students not residents of Oklahoma there is a tuition charge of $350 a year, plus laboratory and course fees as indicated for the different years. The registration for 1943 was 252; graduates, 51. The present session began January 5, 1944 and will end September 15, 1944. The next session will begin September 25, 1944 and end June 15, 1945. The Dean is Tom Lowry, M.D.

OREGON

Portland 1

UNIVERSITY OF OREGON MEDICAL SCHOOL, Marquam Hill.—Organized in 1887. The first class graduated in 1888, and a class graduated each subsequent year except 1898. The Willamette University Medical Department was merged in 1913. Coeducational since organization. It has a faculty of 91 professors and 164 lecturers, assistants and others, a total of 255. Entrance requirements are 82 semester hours of collegiate work. An accelerated program has been adopted involving the admittance and graduation of a class approximately every nine months. The total fees are, respectively, $380, $375, $370 and $376 for residents of Oregon, and $60 a year additional for nonresidents. The registration for 1943 was 284; graduates, 63. The present session began January 3, 1944 and will end September 21, 1944. The subsequent session will begin October 2, 1944. The Dean is D. W. E. Baird, M.D.

PENNSYLVANIA

Philadelphia

THE HAHNEMANN MEDICAL COLLEGE AND HOSPITAL OF PHILADELPHIA, 235 North Fifteenth Street, Zone 2.—Organized in 1848 as The Homeopathic Medical College of Pennsylvania. In 1869 it united with The Hahnemann Medical College of Philadelphia, taking the latter title. Assumed present title in 1885. The first class graduated in 1849. Coeducational beginning with 1941-1942 session. Two years of collegiate work in an approved college of arts and sciences are required for admission. It has a faculty of 113 professors and 114 lecturers, instructors, and others, a total of 227. An accelerated program has been adopted involving the admittance and graduation of a class approximately every nine months. Fees are, respectively, $527, $524, $524 and $547. The registration for 1943 was 521; graduates, 115. The present session began January 3, 1944 and will end September 14, 1944. The subsequent session will begin October 2, 1944. The Dean is William G. Schmidt, Ph.D.

JEFFERSON MEDICAL COLLEGE OF PHILADELPHIA, 1025 Walnut Street.—Organized in 1825 as the Medical Department of Jefferson College, Canonsburg, Pa. It was chartered with its present title in 1838. Classes have been graduated annually beginning 1826. In 1838 a separate university charter was granted without change of title, since which time it has continued under the direction of its own board of trustees. It has a faculty of 92 professors, associate and assistant professors and 232 associates, lecturers, demonstrators and instructors, a total of 324. The bachelor's degree requirement for admission has been suspended for the duration. An accelerated program has been adopted involving the admittance and graduation of a class approximately every nine months. The total fees for the current session are, respectively, $505, $490, $480 and $480. The registration for 1943-1944 was 570; graduates, 133. Registration for the present session is 590. The current session for freshmen, sophomores and juniors extends from January 10, 1944 to September 11, 1944; for seniors from January 10, 1944 to September 22, 1944. The subsequent session will begin October 9, 1944. The Dean is William H. Perkins, M.D.

TEMPLE UNIVERSITY SCHOOL OF MEDICINE, 3400 North Broad Street, Zone 40.—Organized in 1901. The first class graduated in 1904. Coeducational since organization. The faculty numbers 29 professors and 214 associates, assistants and others, a total of 243. An accelerated program has been adopted involving the admittance and graduation of a class approximately every nine months. Two years of collegiate work are required for admission. The fees average $492 per academic year. The registration for 1943 was 468; graduates, 117. The present session began January 3, 1944 and will end September 14, 1944. The subsequent session begins October 2, 1944. The Dean is William N. Parkinson, M.D.

UNIVERSITY OF PENNSYLVANIA SCHOOL OF MEDICINE, Thirty-Sixth and Pine Streets.—Organized in 1765. Classes were graduated in 1768 and in all subsequent years except 1772 and 1775-1779, inclusive. The original title was the Department of Medicine, College of Philadelphia. The present title was adopted in 1909. It granted the first medical diploma issued in America. In 1916 it took over the Medico-Chirurgical College of Philadelphia to develop it as a graduate school. Coeducational since 1914. The faculty consists of 134 professors, associate and assistant professors, and 450 lecturers, associates, instructors and others, a total of 584. Three years of collegiate work are required for admission. An accelerated program has been adopted involving the admittance and graduation of a class approximately every nine months. The tuition fee is $500 each year, with a deposit fee of $15, a general fee including student health of $15 and a matriculation fee of $5. The registration for 1943 was 517; graduates, 130. The present session began January 3, 1944 and will end September 23, 1944. The subsequent session will begin October 2, 1944. The Dean is William Pepper, M.D.

WOMAN'S MEDICAL COLLEGE OF PENNSYLVANIA, Henry Avenue and Abbottsford Road, East Falls.—Organized in 1850. Classes were graduated in 1852 and in all subsequent years except 1862. It has a faculty of 88 professors and 70 assistants, lecturers and others, a total of 158. At least three years of collegiate work are required for admission and candidates with a degree are given preference. The curriculum covers four years of eight and one-half months each. Total fees are $500 yearly. The registration for 1943-1944 was 140; graduates, 21. The last session for freshmen and sophomores began September 1, 1943 and ended May 20, 1944; for juniors and seniors July 5, 1943 to March 16, 1944. The present session for fourth year students began April 24, 1944 and will end January 10, 1945; third year students entered July 10, 1944 and will finish March 24, 1945. For first and second year students the next session will begin September 2, 1944 and end June 2, 1945. The Dean is Margaret D. Craighill, M.D., who is on leave of absence for military service. The Acting Dean is Marion Fay, Ph.D.

Pittsburgh

UNIVERSITY OF PITTSBURGH SCHOOL OF MEDICINE, Bigelow Boulevard.—Organized in 1886, as the Western Pennsylvania Medical College and in 1908 became an integral part of the University of Pittsburgh, removing to the university campus in 1910. The first class graduated in 1887. Coeducational since 1899. The faculty is composed of 30 professors and 370 associates, assistants and others, a total of 400. Entrance requirements are two years of collegiate work. An accelerated program has been adopted involving the admittance and graduation of a class approximately every nine months. The total fees are $500 each year. The registration for 1943 was 326; graduates, 81. The present session began Jan. 3, 1944 and will end about Sept. 29, 1944. The subsequent session will begin Oct. 2, 1944. The Dean is William S. McElroy, M.D.

SOUTH CAROLINA

Charleston 16

MEDICAL COLLEGE OF THE STATE OF SOUTH CAROLINA, 16 Lucas Street.—Organized in 1823 as the Medical College of South Carolina. The first class graduated in 1825. In 1832 a medical college bearing the present title was chartered and the two schools continued as separate institutions until they were merged in 1838. Classes were graduated in all years except 1862 to 1865, inclusive. In 1913, by legislative enactment, it became a state institution. Coeducational from 1895 to 1912, when privileges for women were withdrawn, being restored in 1917. It has a faculty of 49 professors and 40 associates, instructors and others, a total of 89, of which 36 are on a full time basis. The accelerated program for war time operation has been modified to permit only one entering class in 1945 and thereafter continued so as to complete the four academic years in three calendar years. Two years of collegiate work are required for admission during the war, but normally this requirement is three years. The total fees are $422 each year for residents of South Carolina and $622 for nonresidents of the state. The registration for 1943 was 188; graduates, 43. The present session began January 3, 1944 and will end September 16, 1944. The subsequent class will begin October 2, 1944. The Dean is Kenneth M. Lynch, M.D.

TENNESSEE

Memphis 3

UNIVERSITY OF TENNESSEE COLLEGE OF MEDICINE, 874 Union Avenue.—Organized in 1876 at Nashville as Nashville Medical College. First class graduated in 1877, and a class graduated each subsequent year. Became Medical Department of University of Tennessee in 1879. In 1909 it united with the Medical Department of the University of Nashville to form the joint Medical Department of the Universities of Nashville and Tennessee. This union was dissolved in 1911. The trustees of the University of Nashville by formal action of that board named the University of Tennessee College of Medicine as its legal successor. In 1911 it moved to Memphis, where it united with the

College of Physicians and Surgeons. The Memphis Hospital Medical College was merged in 1913. Lincoln Memorial University Medical Department was merged in 1914. Coeducational since 1911. The faculty includes 140 professors and 162 assistants, instructors and others, a total of 302. Two years of collegiate work are required for admission. The B.S. degree in medicine is conferred at the end of the second year. The fees are $120 quarterly. For residents of the state the charge is reduced $50 each quarter. The registration for 1943-1944 was 565; graduates, 82. During the academic year of 1944-1945 the quarters begin June 26, September 25, January 1 and March 26, and end September 16, December 16, March 24 and June 16. The Dean is O. W. Hyman, Ph.D.

Nashville

MEHARRY MEDICAL COLLEGE, Eighteenth Avenue North and Meharry Boulevard, Zone 8. (For Negro Youth).—This school was organized in 1876 as the Meharry Medical Department of Central Tennessee College, which became Walden University in 1900. First class graduated in 1877. Obtained new charter independent of Walden University in 1915. Coeducational since 1876. The faculty is made up of 49 professors and 30 instructors and lecturers, a total of 79. Two years' work in a college of liberal arts are required for admission. Tuition fees are, respectively, $325, $315, $305 and $315 each year. The curriculum covers four academic years of thirty-six weeks each. Registration for 1943-1944 was 250; graduates, 62. In September 1942, Meharry Medical College instituted the quarter system. Meharry initiated an accelerated schedule in July 1943. The present session began March 28, 1944 and will end December 17, 1944. The subsequent session begins December 27, 1944. The President is Edward L. Turner, M.D.; the Dean is Michael J. Bent, M.D.

VANDERBILT UNIVERSITY SCHOOL OF MEDICINE, Twenty-First Avenue South at Edgehill, Zone 4.—This school was founded in 1874. The first class graduated in 1875. Coeducational since 1925. The faculty numbers 255. For matriculation, civilian students must be graduates of collegiate institutions of recognized standing or seniors in absentia, who will receive the bachelor degree from their college after having completed successfully one year of work in the school of medicine. Army and Navy students will be accepted on completion of the Army or Navy premedical program. The course covers four academic years of nearly nine months each, but due to the accelerated program, the four year course is now completed in three calendar years. The fees average $465 per academic year. The registration for 1943 was 206; graduates, 49. The present session began December 27, 1943 and will end September 11, 1944. The following session begins September 25, 1944. The Dean is Waller S. Leathers, M.D.

TEXAS

Dallas

SOUTHWESTERN MEDICAL COLLEGE OF THE SOUTHWESTERN MEDICAL FOUNDATION, 2211 Oak Lawn.—Organized 1943. The first class graduated March 20, 1944. Coeducational since organization. It has a faculty of 126 professors (including associate and assistant professors) and 60 instructors and assistants or a total of 186. The medical college is operated on an accelerated program offering three trimesters of eleven weeks each per academic year so that each beginning student graduates in three calendar years. The tuition fees average $418 per academic year including hospitalization costs. It is planned to change the instruction fee to $175 per trimester commencing January 2, 1945; all other fees with the exception of $5.00 for breakage per academic year will be eliminated. Sixty semester hours are required for admission. Registration for 1943-44 was 270; graduates, 61. The present session began April 3, 1944 and will end December 18, 1944. The subsequent session will begin January 2, 1945. Plans at the present call for the acceptance of new students approximately every nine months after January 2, 1945. Thereafter it is planned to matriculate the next class October 1, 1946. The Dean of Faculty is Tinsley Harrison, M.D.; the Dean of Students is Donald Slaughter, M.D.

Galveston

UNIVERSITY OF TEXAS SCHOOL OF MEDICINE, 912 Avenue B.—Organized in 1891. The first class graduated in 1892. Coeducational since organization. It has a faculty of 72 professors (including associate and assistant professors) and 76 instructors and assistants, a total of 148. The Medical Branch is operating on an accelerated program offering four academic terms of nine months each for completion of the medical curriculum of thirty-six months. Seventy-two semester hours are required for admission. The fees average $92.50 per academic year, including health fees for medical care and hospitalization. The registration for 1943 was 401; graduates, 87. The last freshman class was matriculated November 1, 1943. The freshman class matriculated June 28, 1944. The last class graduated June 24, 1944. The subsequent freshmen will matriculate in September or October 1945. The Dean is Chauncey D. Leake, Ph.D.

Houston

BAYLOR UNIVERSITY COLLEGE OF MEDICINE, 509 Lincoln Street, Houston.—Organized in 1900 at Dallas as the University of Dallas Medical Department. In 1903 it took its present name and became the Medical Department of Baylor University. It acquired the charter of Dallas Medical College in 1904. The school was moved to Houston in 1943. Coeducational since organization. The first class graduated in 1901. Entrance requirements are 72 semester hours of collegiate work. The course covers four years of eight months each. An accelerated program was adopted beginning July 12, 1943, involving the admittance and graduation of a class every nine months. The fees are, respectively, $418, $408, $398, $423. The registration for 1943-44 was 129; graduates, 16. The present session began March 27, 1944 and ends November 13, 1944. The subsequent session will begin November 20, 1944. The Dean is Walter H. Moursund, M.D.

UTAH

Salt Lake City

UNIVERSITY OF UTAH SCHOOL OF MEDICINE, University Street.—Organized in 1906. Coeducational since organization. Four year curriculum established March 1943 and is now in full operation. The first senior class will graduate September 6, 1944. During the national emergency an accelerated program has been adopted with the admittance of a new class every nine months. Three years of collegiate work are required for admission. The faculty is composed of 11 professors, 23 associate professors, 25 assistant professors, 31 instructors and 12 lecturers; a total of 102. The fees for each quarter are $135; there is a nonresident fee of $55 each year. The registration for the 1943 year was 126. The present session began December 13, 1943 and will end September 2, 1944. The subsequent session will begin September 11, 1944. The Dean is A. Cyril Callister, M.D.

VERMONT

Burlington

UNIVERSITY OF VERMONT COLLEGE OF MEDICINE, Pearl Street, College Park.—Organized with complete course in 1822. Classes graduated in 1823 to 1836, inclusive, when the school was suspended. It was reorganized in 1853 and classes were graduated in 1854 and in all subsequent years. Coeducational since 1920. It has a faculty of 60 professors and 44 instructors, and assistants, a total of 104. Three years of college work are required for admission. An accelerated program has been adopted involving the admittance and graduation of a class every nine months. For residents of Vermont the tuition fee is $400 each session. Nonresidents are charged an additional $150 each session. A $25 fee is charged for the doctor's degree. The registration for 1943 was 142; graduates, 33. The present session began January 3, 1944 and will end September 13, 1944. The subsequent session will begin September 25, 1944. The Dean is Clarence H. Beecher, M.D.

VIRGINIA

Charlottesville

UNIVERSITY OF VIRGINIA DEPARTMENT OF MEDICINE.—Organized in 1827. Classes were graduated in 1828 and in all subsequent years except 1865. Coeducational since the session of 1920-1921. An accelerated program has been adopted involving the admittance and graduation of a class approximately every nine months. It has a faculty of 49 professors and 46 lecturers, instructors, assistants and others, a total of 95. Two years of college work are required for admission. For residents of Virginia the total fees average $388 per academic year. Nonresidents are charged an additional $50 each year. The registration for 1943 was 264; graduates, 54. The present session began December 29, 1943 and will end September 14, 1944. The subsequent session will begin September 29, 1944. The Dean is Harvey E. Jordan, Ph.D.

Richmond

MEDICAL COLLEGE OF VIRGINIA, Twelfth and Marshall Streets—Organized in 1838 as the Medical Department of Hampden Sydney College. Present title was taken in 1854. In 1913 the University College of Medicine was merged. In 1914 the North Carolina Medical College was merged. Coeducational since 1918. Classes were graduated in 1839 and in all subsequent years. It has a faculty of 97 professors and 170 lecturers, instructors and others, a total of 267. Of this group 11 professors and 79 lecturers, instructors and others are on military leave. Two years of collegiate work are required for admission. An accelerated program has been adopted involving the admission and graduation of a class approximately every nine months. Fees average $384 per academic year. Nonresidents are charged an additional $125 each year. The registration for 1943 was 311; graduates, 74. The present session began December 30, 1943, for first year students; January 3, 1944 for all other students and will end September 23, 1944. The subsequent session will begin October 4, 1944, for first year students; October 9, 1944, for all other students. The Dean is J. P. Gray, M.D.

WISCONSIN

Madison 6

UNIVERSITY OF WISCONSIN MEDICAL SCHOOL, 418 North Randall Avenue.—Organized in 1907. Gave only the first two years of the medical course until 1925, when the clinical years were added. Coeducational since organization. The requirement of three years of collegiate

work for admission has been reduced to two years for the duration. Beginning July 1, 1943, a class was admitted every nine months. An accelerated program has been adopted permitting the completion of four years of academic work in three calendar years. It has a faculty of 64 professors and 67 lecturers, instructors and others, a total of 131. The fees average $206 per academic year. An additional fee of $200 each year is charged nonresidents. The registration for 1943-1944 was 265; graduates, 57. The present session for freshmen began April 1, 1944 and the following session will begin January 1, 1945. The Acting Dean is Walter J. Meek, Ph.D.

Milwaukee

MARQUETTE UNIVERSITY SCHOOL OF MEDICINE, 561 North Fifteenth Street.—Organized in December 1912 by the merger of the Milwaukee Medical College and the Wisconsin College of Physicians and Surgeons. Coeducational since organization. It has a faculty of 192. Three years of collegiate work are normally required for admission. During the duration students are admitted in accordance with the prescribed Army and Navy programs. The accelerated program includes three semesters each calendar year, an equivalent of four years of eight and a half months each in three calendar years. The fees average $450 per academic year. The registration for 1943 was 347; graduates, 70. The last session began November 1, 1943. The present session began July 31, 1944. The Dean is Eben J. Carey, M.D.

CANADA

Alberta

UNIVERSITY OF ALBERTA FACULTY OF MEDICINE, Edmonton.—Organized in 1913. Coeducational since organization. Has given the complete six-year medical course since 1924. New course—three years premedical, four years medicine, one year undergraduate internship for medical degree—has been offered beginning with the session 1942-1943. The faculty includes fifteen full time and sixty-nine part time professors, instructors and assistants and others, a total of eighty-four, of whom twenty are absent on war service. Tuition for the first and second years is $255; for the third and fourth years $265 and for the fifth and old sixth year $263. The registration for 1943 was 151; graduates 35. The present session (accelerated) including only the 3rd, 4th and old 6th years began on June 1st, 1944, and will end on December 31st, 1944. The following session (regular) will open on September 28th, 1944, for the 1st and 2nd years (not accelerated) and in February 1945 (accelerated) for the 4th and 5th years. The Dean is Allan C. Rankin, M.D.

Manitoba

UNIVERSITY OF MANITOBA FACULTY OF MEDICINE, Bannatyne Avenue, Winnipeg.—Organized in 1883 as Manitoba Medical College; first class graduated in 1886, and a class graduated each subsequent year. The college transferred all its property to the University of Manitoba in 1919 and assumed the present title. Coeducational since organization. The faculty includes 36 professors and 103 instructors and assistants, a total of 139. Matriculation requirements include two years of collegiate work in the faculty of arts and science of a recognized university. An accelerated program was adopted but was discontinued with class entering in fall of 1943. The course extends over four years of eight months each and a hospital internship. The fees average $254 yearly. The registration for 1943-1944 was 229; graduates, 61. The last class for freshmen began August 21, 1943. The subsequent session begins for first and second years, September 1, 1944; third year began January 3; fourth year, January 17; and will end April, 1945, September 30, 1944, and October 21, 1944. The Dean is A. T. Mathers, M.D.

Nova Scotia

DALHOUSIE UNIVERSITY FACULTY OF MEDICINE, Morris Street, Halifax.—Organized in 1867. Incorporated as the Halifax Medical College in 1875. Reorganized as an examining faculty, separate from the Halifax Medical College, in 1885. In 1911, in accordance with an agreement between the Governors of Dalhousie University and the Corporation of the Halifax Medical College, the work of the latter institution was discontinued and a full teaching faculty was established by the university. First class graduated in 1872. Coeducational since 1871. It has a faculty of 45 professors and 34 demonstrators, lecturers and others, a total of 79; 14 of whom are in active service, and are on leave for the duration. Requires for matriculation two years of arts. The regular medical course covers four years and a hospital internship of one year. Beginning in 1942 the last three years of the medical course were given under the accelerated plan. This was accomplished eliminating holidays, the content of the course being practically the same. The final year internship was reduced to eight months. On January 6, 1944, Faculty decided to discontinue acceleration. The last two years, that is one graduating in May, 1944 and the present fourth year were conducted on the accelerated plan. All other years will be conducted under the old schedule. The fees average $317 yearly; $250 additional registration fee payable by students outside the British Empire. The last freshman class began September 14, 1943 and ended May 16, 1944. The subsequent freshman class will begin September 1944. The registration for 1943-1944 was 169; graduates, 36. The Dean is H. G. Grant, M.D.

Ontario

QUEEN'S UNIVERSITY FACULTY OF MEDICINE, Kingston.—Organized 1854, first class graduated in 1855, and a class graduated each subsequent year. The faculty numbers 62. Fees for the first year amount to $231, and for the following years $253. The course covers six years of thirty teaching weeks. An accelerated program has been adopted, and is in effect for all years except the first, which has returned to the normal course. Freshmen will be admitted annually. Registration for 1943-1944 was 272; graduates, 47. The last session for freshmen began September 27, 1943 and ended April 30, 1944. The next session begins for first, second and fifth year students on September 25, 1944; for fourth year students on January 8, 1945; for sixth year students on April 30, 1945; and for third year students in September, 1945. The last Convocation was held on May 4, 1944, and another class will graduate in February, 1945. The Dean is G. Spencer Melvin, M.D.

UNIVERSITY OF TORONTO FACULTY OF MEDICINE, Toronto 5.—Organized in 1843 as the Medical Faculty of King's College. Abolished in 1853. Reestablished in 1887. In 1902 it absorbed Victoria University Medical Department, and in 1903 it absorbed the Medical Faculty of Trinity University. Coeducational since 1903. The B.Sc. (Med.) degree is conferred at the end of the third or sixth year. It has a faculty of 77 professors and 336 (including 86 on leave of absence for the duration of the war) lecturers, associates and others, a total of 413. The fees are $240 for the first year; for the second $315; $315 for the third year; $340 for the fourth and fifth years and $368 the sixth year. The registration for 1943-1944 was 772, graduates, 107. The last freshman class began September 28, 1943 and ended May 6, 1944. The next first year course begins September 26, 1944 and ends May 5, 1945. Students in the final year graduated May 5, 1944 and will graduate every eight months thereafter. The Dean is W. E. Gallie, M.D.

UNIVERSITY OF WESTERN ONTARIO MEDICAL SCHOOL, Ottaway Avenue, London.—Organized in 1881 as the Western University Faculty of Medicine; first class graduated in 1883, and a class graduated each subsequent year. Present title in 1923. The medical school has been under the control of the Board of Governors of the University of Western Ontario since 1913. Coeducational since 1913. The faculty numbers 101. The normal course of study covers five years of ten months each. The total fees to residents of Canada for the last four years respectively are $356, $356, $352 and $360; nonresidents are charged $646, $646, $642 and $650 for each of the last four years. The registration for 1943-1944 was 201; graduates 31. The last session for freshmen began September 20, 1943 and ended May 1944. The next session begins for all years September 5, 1944, and ends June 16, 1945. The Dean is F. J. H. Campbell, M.D.

Quebec

MCGILL UNIVERSITY FACULTY OF MEDICINE, 3640 University Street, Montreal.—Founded in 1823 as Montreal Medical Institution; became the Medical Faculty of McGill University in 1829; first class graduated under the university auspices in 1833. No session between 1836-1839, owing to political troubles. In 1905 it absorbed the Faculty of Medicine of the University of Bishop's College. Coeducational since 1919. Three years of collegiate work are required for admission. An acceleration program has been adopted for the upper classes. The faculty consists of 82 professors and 204 lecturers and others, a total of 286. The total fees for each of the four medical years are $391 plus $100 for non-British subjects. The registration for 1943-1944 was 409; graduates, 97. The present session began for sophomores June 7, juniors February 17 and seniors May 6, 1943. Freshmen will enroll September 5, 1944. The next class will graduate July 31, 1945. The Dean is J. R. Fraser, M.D.

UNIVERSITY OF MONTREAL FACULTY OF MEDICINE, 2900 Mount Royal Boulevard, Montreal.—Organized in 1843 as the Montreal School of Medicine and Surgery. In 1891, by Act of Parliament, the Medical Faculty of Laval University (organized in 1878) was absorbed. Present name by Act of Parliament in 1920. A class was graduated in 1843 and each subsequent year. Coeducational since 1925. The faculty numbers 150. The requirements for admission are: First, a B.A. degree (or its equivalent); Second, one year premedical in the faculty of pure sciences (or an entrance examination on the premedical subjects). An accelerated program has been adopted. An internship is required for graduation. The fees average $235 yearly. The registration for 1943-44 was 298; graduated, 52. The present session for juniors and seniors began February 1, 1944, and will end September 30, 1944. Freshmen and sophomores will enroll September 18, 1944, and will complete the year May 31, 1945; there is no accelerated course for them, nor for those of the subsequent years. The Dean is Albert LeSage, M.D.

LAVAL UNIVERSITY FACULTY OF MEDICINE, Quebec.—The Quebec School of Medicine, organized in 1848, became in 1852 the Laval University Faculty of Medicine; first class graduated in 1855, and a class graduated each subsequent year. An accelerated program was adopted in 1942 on account of the war. The faculty numbers 93. The fees for each of the medical years are $200 for residents of Canada. Nonresidents are charged an extra fee of $200 each year. The premedical requirement is a B.A. degree or its equivalent. The registration for 1943-1944 was 416; graduates, 57. The last session began September 15, 1943 and ended May 20, 1944. The next class will graduate in June 1945. The subsequent session will begin September 12, 1944. The Dean is Charles Vézina, M.D.

APPROVED SCHOOLS OF THE BASIC MEDICAL SCIENCES

ALABAMA

University (Tuscaloosa)

UNIVERSITY OF ALABAMA SCHOOL OF MEDICINE.—Organized in 1859 at Mobile as the Medical College of Alabama. Classes graduated in 1861 and subsequent years excepting 1862 to 1868, inclusive. Reorganized in 1897 as the medical department of the University of Alabama. Present title assumed in 1907, when all property was transferred to the University of Alabama. In 1920 clinical teaching was suspended and the medical school was removed to the university campus near Tuscaloosa. A four-year medical school is being developed at Birmingham to be known as "The Medical College of Alabama." Dr. Roy R. Kracke has been appointed as Dean in charge of developments at Birmingham. The present school of basic medical sciences will be maintained at the University until the medical building at Birmingham has been completed. Coeducational since 1920. Minimum entrance requirements are 96 semester hours. An accelerated program has been adopted and a new freshman class will be admitted approximately every nine months. The faculty includes 14 professors and 14 instructors, assistants, and others, a total of 28, of whom 7 are absent in the Armed Forces. The tuition fees are $354 each academic year plus $75 differential for nonresidents. The registration for 1943 was 108. The present session began Dec. 6, 1943, and will end Aug. 15, 1944. The subsequent session will begin Sept. 4, 1944. The Dean is Stuart Graves, M.D.

MISSISSIPPI

University

UNIVERSITY OF MISSISSIPPI SCHOOL OF MEDICINE.—Organized in 1903. Coeducational since organization. A clinical department was established at Vicksburg in 1908 but was discontinued in 1910 after graduating one class. An accelerated program has been adopted and a new freshman class is admitted each nine months. Entrance requirement is three years of collegiate work or ninety semester hours of credit. The B.S. degree in medicine is conferred at the end of the second year. The faculty includes 9 professors, 2 assistant professors, 1 adjunct professor, 17 instructors, assistants and others, a total of 29. The total fees for the first year are $375, and for the second year $348. The registration for 1943 was 55. The last class began September 27, 1943 and ended May 29, 1944. The present session began May 31, 1944 and will end January 23, 1945. The subsequent session begins January 29, 1945. The Dean is J. B. Looper, M.D.

MISSOURI

Columbia

UNIVERSITY OF MISSOURI SCHOOL OF MEDICINE.—Organized at St. Louis in 1845; was discontinued in 1855 but was reorganized at Columbia in 1872. Teaching of the clinical years was suspended in 1909. Coeducational since 1872. An accelerated program has been adopted involving the admittance of a class every nine months. The faculty includes 23 professors and 19 instructors, lecturers and others, a total of 42. The entrance requirements are sixty semester hours of collegiate work. The B.S. degree in medicine is conferred at the end of the second year. Total fees for the first year are $266, for the second, $224. The registration for 1943 was 80. The current session began December 27, 1943 and will end September 1, 1944. The subsequent session will begin September 16, 1944. The Dean is Dudley S. Conley, M.D.

NEW HAMPSHIRE

Hanover

DARTMOUTH MEDICAL SCHOOL.—Organized by Dr. Nathan Smith in 1797. The first class graduated in 1798. It is under the control of the trustees of Dartmouth College. Courses of the third and fourth year were discontinued in 1914. The faculty consists of 22 professors and 14 instructors, a total of 36. Army and Navy premedical curricula accepted for admission. An accelerated program has been adopted admitting a freshman class approximately every nine months or eight months of actual teaching. Candidates for the A.B. degree in Dartmouth College may substitute the work of the first year in medicine for that of the senior year in the academic department. The tuition is $450 for each year. The registration for 1943 was 48. The last session began October 31, 1943 and ended June 24, 1944. The present session began July 1, 1944. The Dean is John P. Bowler, M.D.

NORTH CAROLINA

Chapel Hill

UNIVERSITY OF NORTH CAROLINA SCHOOL OF MEDICINE.—Organized in 1890. Until 1902 this school gave only the work of the first two years, when the course was extended to four years by the establishment of a department in Raleigh. The first class graduated in 1903. A class was graduated each subsequent year, including 1910, when the clinical department at Raleigh was discontinued. Coeducational since 1914. Three years of college work are required for admission. Certificates are awarded on the completion of two years' work in medicine. The faculty is composed of 20 professors, 14 instructors and 7 lecturers, a total of 41. The fees for each year are $322.20 for residents; for nonresidents an additional fee of $100. The school has gone on the accelerated schedule for the duration of the war. The registration for 1943 was 91. The present session began December 8, 1943 and will end September 9, 1944. The subsequent session will begin September 18, 1944. The Dean is W. Reece Berryhill, M.D.

NORTH DAKOTA

Grand Forks

UNIVERSITY OF NORTH DAKOTA SCHOOL OF MEDICINE.—Organized in 1905. Offers only the first two years of the medical course. Coeducational since organization. Three years work in a college of liberal arts are required for admission. (For the duration of the war about two years as per Army and Navy plans.) The B.S. degree in combined arts-medical course is conferred at the end of the second year. The faculty consists of 7 professors and 7 instructors, a total of 14. The fees are $170 each year for resident students and $340 for nonresidents. The registration for 1943-44 was 57. The present session began March 27, 1944 and ends Dec. 16, 1944. The subsequent session will begin January 2, 1945. The Dean is H. E. French, M.D.

SOUTH DAKOTA

Vermillion

UNIVERSITY OF SOUTH DAKOTA SCHOOL OF MEDICAL SCIENCES.—Organized in 1907 as the University of South Dakota School of Medicine. Present title in 1937. Coeducational since organization. Offers only the first two years of the medical course. Two years work in a college of liberal arts are required for admission. Students who complete the third year of premedical work in the College of Arts and Sciences at the University of South Dakota may apply the work of the first year of medicine to the A.B. degree. The B.S. degree is conferred at the end of the second year on those students who do not hold a combination (Arts and Sciences and Medicine Course) A.B. degree. The faculty numbers 18. An accelerated program has been adopted involving the admittance of a class approximately every nine months. The tuition is $150 each year for residents and $255 for nonresidents. The registration for 1943 was 44. The present session began Dec. 13, 1943 and will end September 2, 1944. The subsequent session will begin September 11, 1944. The Dean is Joseph C. Ohlmacher, M.D.

WEST VIRGINIA

Morgantown

WEST VIRGINIA UNIVERSITY SCHOOL OF MEDICINE.—Organized in 1902, gives the first two years of the medical course, but agreement has been made for the transfer of 20 students each year to the Medical College of Virginia. Coeducational since organization. Entrance requirements are three years of collegiate work. The B.S. degree in medicine is conferred at the end of the second year. An accelerated program has been adopted involving the admittance of a class every nine months. Faculty numbers 24. Fees for residents of the state are, respectively, $255 and $265; nonresidents, $150 additional each year. The registration for 1943 was 55. The present session began December 27, 1943 and will end September 16, 1944. The subsequent session begins September 25, 1944. The Dean is Edward J. Van Liere, M.D.

CANADA

Saskatchewan

UNIVERSITY OF SASKATCHEWAN SCHOOL OF MEDICAL SCIENCES, Saskatoon.—Organized in 1926. Coeducational. Offers the first two years of the medical course. An accelerated program has been adopted. Two years of collegiate work are required for admission. The B.A. degree is conferred at the end of the second year. The medical faculty includes 7 professors and 4 lecturers and assistants, a total of 11. The fees are $150 for each year. The registration for 1943-44 was 46. The last session for freshmen began October 4, 1943 and ended May 12, 1944. The next session begins September 28, 1944 for the first year and ends May 11, 1945. The second year began May 30 1944 and ends December 22, 1944. The Dean is W. S. Lindsay, M.B.

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SATURDAY, AUGUST 19, 1944

CHALLENGES TO MEDICAL EDUCATION

The medical schools and their faculties have met the challenge of wartime conditions admirably, teaching more students in less time than formerly in the face of greatly depleted numbers of instructors. The devotion of faculty members who carried on the increased work under adverse conditions is highly commendable. In the period of demobilization to come, special consideration should be given to the preferential early release of physicians on medical school faculties so as to restore the quality of medical instruction to a higher level as soon as possible.

The studies carried out by the Committee on Postwar Medical Service and reported by Lieut. Col. Harold Lueth in this issue (page 1099) indicate the magnitude of the problem of providing further education for discharged medical officers. There were requests for additional postwar training from 796 of 1,000 officers replying to a questionnaire. Nearly 34 per cent requested courses of less than six months' duration. Nearly 46 per cent desired further work in hospitals for six months to three or more years. Provision of the requisite additional educational opportunities will require the concerted efforts of internship and residency hospitals, medical schools, medical societies, specialty boards and others. We owe this service to those medical officers whose education was interrupted by the war.

Numerous problems in undergraduate medical education also must be met. Wartime experiences in medical care for the armed forces and for civilians have accentuated the growing importance of certain expanding fields of medicine. Notable among these are neuropsychiatry, public health, industrial health, physical medicine and tropical medicine. The place of these in undergraduate and graduate medical education is considered by authorities in these fields in this issue (pages 1103 to 1109).

More material cannot be added to the undergraduate curriculum unless other subject matter is withdrawn. At many points a reduction of the content of "courses" not only would be possible but would improve the educational program. Vested interests of certain departments or faculty members, established by outworn tradition or the aggressive capturing of curricular time, must not be permitted to stand in the way of an improved curriculum which will more adequately prepare the student for the problems of today in medicine.

THE CIVILIAN DOCTOR'S RESPONSIBILITY

The physicians of the United States have an enviable record in the war. Those in the armed forces both by their quality and by their numbers have cooperated in the finest program of medical care ever developed for any army or navy. More than 55,000 physicians left their civilian positions, and those who remained at home took over most of the medical care that had been previously given by those entering the service. Theirs too has been a tremendous, back breaking undertaking. Each physician is caring for fifteen hundred instead of a thousand people on the average. Those who have gone from each community have been the healthies. portion of the populace, the physically qualified young men and women. For the civilian physicians remained those who were not physically qualified and therefore required more attention per capita than the group cared for by physicians prior to the war.

This load has resulted in an increase in morbidity and mortality in the medical profession. While some advantages, particularly increased income, accrued to these physicians, they have shortened their lives and impaired their health in meeting this extra task.

At present only a sufficient number of physicians remain in civil life to meet the needs of the civilian population, provided they are properly distributed. In an attempt to aid such proper distribution, the Procurement and Assignment Service of the War Manpower Commission limited recruiting in certain states and facilitated over three thousand three hundred relocations. However, perhaps as a result of what seems to be the impending end of conflict, a tendency has developed on the part of some physicians to move into other areas of practice or to enter postgraduate or other special training rather than to remain in their present essential job of meeting the needs of the community that depends on them for medical care.

The medical profession itself requested that a federal agency be set up by which the members could voluntarily supply the armed forces with necessary medical care and as a part of that federal program to continue minimal adequate care for the civilian population. If

now any appreciable number of physicians leave positions in which they are considered essential, the medical profession will fail in the second and equally important goal which was set for its attainment. Each physician who is in an essential position should remain in that capacity until present shortages of physicians can be relieved. The excellent record of the medical profession both in peace and in war should not be marred by any sudden exodus at this time to meet the call of greener interesting fields or more lucrative pastures.

DISEASE AND RACE

Studies of the relations between race and disease have not thus far yielded any results useful in the prevention or therapy of diseases. Such investigations have been limited largely to the compilation of statistical data covering the comparative incidence of certain disorders or dispositions to various diseases of endogenous or exogenous origin among the various races. Relatively little effort has been made to correlate such numerical facts with peculiarities and differences in the functional and anatomic constitution of different racial groups. This information would, of course, be distinctly valuable in determination of the endogenous factors that control the susceptibility or resistance of the individual to pathogenic agents and mechanisms.

European investigators have turned their main attention to the differences existing apparently in this respect between the Nordic, Slavic, Mediterranean and Jewish racial mixtures inhabiting Europe and North Africa. They noted, for instance, the higher frequency of cutaneous cancer among the fair skinned members of the Nordic race, the predominance of thalassanemia among the inhabitants of the central and eastern parts of the Mediterranean basin and the greater incidence of lipoidoses, diabetes mellitus, vascular degenerative diseases, pentosuria and fibroids and cancers of the corpus uteri among the Jewish parts of the white race.[1] American observers confirmed these observations in studies on the white population of the United States and extended their investigations on American Negroes, Indians and Filipinos. The almost exclusive occurrence of sickle cell anemia among Negroes and a high incidence of malignant nephrosclerosis, atherosclerosis, hypertension, keloids, uterine fibroids and ovarian tumors among the members of this racial group has been recorded. On the other hand, the Negroes exhibited a low incidence of cutaneous cancer, dermatitis and coronary thrombosis in comparison to the white population.[2] American Indians and Eskimos have normally a lower blood pressure than the white race and they resemble in this respect other Mongoloid groups, such as Chinese, Japanese and Koreans. Filipinos, however, behave in regard to blood pressure much like European and American white persons living in the tropics.

The present worldwide struggle has scattered American physicians all over the globe and brought them into intimate contact with members of practically all races. American scientists have therefore a unique opportunity for studying the relations that exist between race and disease. They may thereby contribute valuable data to the defective and often contradictory information existing on this matter. Military necessities which prescribe the enforcement of sanitary regulations and medical supervision of the native population of many foreign lands provide at the present time opportunities and conditions for such investigations which are not attainable when peacetime conditions again prevail. Special attention should be paid in such studies to the long range effects which hybridization exerts on the health and anatomic and mental constitution of the resulting racial mixtures. As racial interbreeding has been in recent years mainly the subject of social, economic and political considerations, it becomes an urgent necessity that reliable biologic facts on this important subject be obtained, which may influence the future of our national life.

1. Schottky, J.: Rasse und Krankheit, Munich, J. F. Lehmanns Verlag, 1937.
2. Lewis, J. H.: The Biology of the Negro, Chicago, University of Chicago Press, 1942.

Current Comment

NEW MEDICAL SCHOOLS

Within the past year three schools have been added to the list of approved medical schools maintained by the Council on Medical Education and Hospitals. The Southwestern Medical College of the Southwestern Medical Foundation is located at Dallas, Texas. Dr. Tinsley Harrison is dean of the faculties. The Bowman Gray School of Medicine has expanded from a school of the basic medical sciences to a four year medical school, located at Winston-Salem, N. C. Dr. C. C. Carpenter continues as dean. Under the deanship of Dr. A. Cyril Callister, the University of Utah School of Medicine, at Salt Lake City, has also developed a four year program. The University of Alabama has virtually completed arrangements for expansion to the four year status, employing the facilities of the Hillman and Jefferson hospitals in Birmingham. It is anticipated that junior instruction will commence about July 1945 under the direction of Dean Roy R. Kracke. Dr. Stuart Graves will continue as dean of the basic sciences. The Council on Medical Education and Hospitals is glad to encourage and assist well planned institutions in developing medical schools where the need exists; it must, however, discourage ill conceived ventures in medical education. New and more medical schools will not solve the problem of distribution of medical care. There is no assurance that more doctors will practice in rural communities if more doctors are produced. The rate of production of doctors and their adequate distribution are independent problems.

NECROPSIES IN INTERNSHIP HOSPITALS

Under wartime conditions, with staff shortages, efforts at maintaining an adequate necropsy percentage tend to lag in some hospitals. The Council on Medical Education and Hospitals is aware of these difficulties, yet its responsibility for maintaining educational standards remains. The Council cannot continue for approval hospitals which fail to maintain the required 15 per cent of necropsies or which are unable to correct deficiencies in necropsy performance within a reasonable time. The necropsy ratio of a hospital is recognized as one of the more reliable indexes of the quality of educational service in hospitals. This service is especially important now, since the curtailed internships must be made maximally valuable to house officers. To insure that postmortem examinations are requested on all deaths, house officers should be required in each instance to file a report in the superintendent's office containing either a signed permit or a notation as to why the necropsy could not be obtained. This procedure has been extremely helpful in many hospitals, for it creates further interest among the medical staff and serves to stimulate the interns and residents to greater effort.

TEXAS CHIROPRACTIC ACT UNCONSTITUTIONAL

Since 1876 there has remained in the constitution of Texas a clause granting the legislature the right to pass laws prescribing the qualifications of practitioners of medicine coupled with a proscription that "no preference shall ever be given by law to any schools of medicine." The meaning of this proscription has been an issue in two important Texas cases. In one case, which arose a number of years ago, Texas osteopaths sought to compel the governing board of a municipal hospital to permit the use of its facilities by such practitioners. They relied in part on the constitutional proscription to support their case, which eventually reached the Supreme Court of the United States. The court held that the proscription had nothing whatever to do with the right of osteopaths to practice in municipal hospitals, and the right demanded was denied.[1] More recently, in 1943, Texas chiropractors were successful in securing the passage of legislation creating an independent board of chiropractors to examine and license applicants and prescribing qualifications to be possessed by persons desiring to practice chiropractic. Theretofore adherents of the cult were required to meet the standards applicable to all other practitioners. In other words, until 1943 Texas had a single standard of medical licensure. Chiropractor Halsted failed to obtain a license under the new act, and prosecution was instituted. He sought his release by writ of habeas corpus, asserting that the act was unconstitutional because of the provision in the Texas constitution. He was successful in convincing the court of the soundness of his contention. In an opinion delivered June 7, 1944 by the Commission of Appeals and subsequently approved by the Court of Criminal Appeals,[2] it was pointed out that in enacting the chiropractic act the legislature had given preference to chiropractors over all others engaged in treating the human body for diseases and disorders because of the fact that the cultists were not required to have the same educational qualifications nor were they required, as a condition precedent to their right to treat patients, to pass a satisfactory examination on the same subjects that are required of all other practitioners. That the act violated the nonpreference clause of the constitution was held to be clear and, quoting from the opinion, "when the Constitution speaks, it is supreme. An enduring and lasting government requires that it so remain."

1. Hayman v. City of Galveston, 47 Sup. Ct. 363.

REORGANIZATION OF MEDICAL TRAINING IN GREAT BRITAIN

Word has been received from the British Information Services that the Interdepartmental Committee on Medical Schools has made the following recommendations: That every medical school should be an integral part of some university, and grants from public funds for its educational work should be received through the university; that there should be more full time appointments and salaries for clinical teachers, with an academic head for each clinical division; that postgraduate study should be encouraged as a feature of regular practice by refresher courses for general practitioners, along with regular association with hospitals and the work of specialists; that medical schools should have a triple function with regard to research: (1) to discover and train research workers, (2) to facilitate their work by good teaching staffs and (3) to house special research units. It is recommended that central health service councils be established with university representation on them, that nonteaching hospitals have access to teaching centers and that special centers maintain refresher courses for general practitioners.

SCHOOLS FOR X-RAY TECHNICIANS

Essentials of an Acceptable School for X-Ray Technicians were adopted by the House of Delegates of the American Medical Association at the recent annual session. These essentials were prepared by the Council on Medical Education and Hospitals with the advice of various organizations interested in the training of x-ray technicians. A survey of schools for x-ray technicians disclosed that six were fulfilling the essentials, sixty-three had minor deficiencies and sixty-two will require further reorganization to meet the present requirements. Each of the schools having deficiencies will be urged to comply with the essentials before the first list of approved schools for x-ray technicians is printed in THE JOURNAL. The Council will continue its work with the various schools engaged in the training of x-ray technicians and will give full assistance in the development of satisfactory training programs.

2. Ex parte W. B. Halsted (No. 22,775) decided June 7, 1944, Court of Criminal Appeals.

MEDICINE AND THE WAR

ARMY

BLIND YANKS TREATED AT ST. DUNSTAN'S

The first American casualty from Normandy was recently admitted at St. Dunstan's, famous British hospital and training center for the war blinded. Under the system of mutual aid, by which not only equipment but the brains and experience of Britain and America are pooled, it was agreed by the American and British governments that this unique eye hospital would receive American casualties from the European theater and treat and train them exactly as are British soldiers and airmen. The United States could similarly take care of British eye casualties from the Pacific area. Seven Americans have been admitted to St. Dunstan's to date. Some have now returned to America to continue treatment and training. Others have so taken to St. Dunstan's training and personnel that they have asked to stay in England until thoroughly rehabilitated and have been allowed to do so.

The most recent achievements in coordination between British and American services for the blind include the production of "talking books." These full length recorded novels, biographies and many other types are so made that the blind can confidently handle and play them. Like ordinary phonograph records except for the fact that they are very slow running, they must be played on a specially constructed machine. Thus technical coordination is essential in order for Britain and the United States to exchange recordings.

Britain has just begun making talking books for the Library of Congress and other distribution in America, and several copies of "Whereas I Was Blind," by Sir Ian Fraser, the personal story of the founder of St. Dunstan's, are now en route. St. Dunstan's finds that the blind especially like novels which have made popular plays and films, and American recordings of Daphne Du Maurier's "Rebecca" and Margaret Mitchell's "Gone With the Wind," on eight records, have recently arrived here. Richard Llewellyn's "How Green Was My Valley" is a popular British recording.

POSTWAR TRAINING OF MEDICAL CORPS OFFICERS

The Office of the Surgeon General of the Army has announced the appointment of a committee to formulate plans for postwar training of medical corps officers who will be separated from the military service at the end of the war. The committee consists of Brig. Gen. Raymond W. Bliss, chief of operations service, chairman; Brig. Gen. James S. Simmons, chief of preventive medicine service; Col. James R. Hudnall, chief of personnel service; Brig. Gen. Fred W. Rankin, director of surgery division; Brig. Gen. Hugh J. Morgan, director of medicine division; Col. Floyd L. Wergeland, director of training division; Col. William P. Holbrook and Lieut. Col. R. H. Meiling, representatives from the Army Air Forces; Col. R. B. Skinner, representative from the Army Ground Forces; George B. Darling, M.D., representative from the National Research Council.

ARMY NURSE CORPS ACQUIRES FULL MILITARY STATUS

Approximately 40,000 Army nurses have become officers of the Army of the United States, acquiring full military status for the first time since the Army Nurse Corps was founded in 1901 by an act of Congress. By the terms of an executive order signed by President Roosevelt, the entire personnel of the Army Nurse Corps has been moved bodily into the Army, with the same pay and prerogatives as other officers. Prior to passage of the bill signed by the President, June 22, and made fully effective July 12, Army nurses held what was known in the Army as "relative rank," giving them subordinate status and limited military authority. Army nurses now have the same status as members of the WAC, who were also an army auxiliary when first organized. Commissions in their present grades will be issued to all members of the Army Nurse Corps under the provisions of the new executive order unless they expressly decline appointment. Female dietitians and physical therapy aides will have the same military status as nurses and will be commissioned similarly.

MAJOR MARGARET M. JANEWAY ASSIGNED TO NEW DUTIES

Major Margaret M. Janeway, who spent fourteen months in Italy and North Africa as physician for 1,800 members of the Women's Army Corps in that area, was recently assigned to duty as assistant to Major Margaret D. Craighill, director of the Women's Medical Unit, Office of the Army's Surgeon General, Washington, D. C. This unit develops policies concerning the medical care and welfare of women in the Army, including the thousands of nurses, dietitians and physical therapy aides, as well as the members of the Women's Army Corps. Dr. Janeway became a contract surgeon in 1942 and was assigned to the WAC. She was commissioned a first lieutenant in December 1942 and landed in Africa Jan. 26, 1943 with the first Women's Army Corps contingent to be sent abroad. At that time her charges numbered 190 women, carefully chosen from various sections of the United States. When she returned to the United States her responsibilities had been broadened to include all the members of the Women's Army Corps in North Africa and Italy. Dr. Janeway graduated from Columbia University College of Physicians and Surgeons in 1927.

UTILIZATION OF RECOVERED PSYCHONEUROTIC PATIENTS

Recovered psychoneurotic patients are given retraining by the Army so that they may be utilized for further service. Classification boards carefully review each man's record and indicate the degree and kind of service he is capable of performing. The Classification Board will be constituted only for the purpose of removing classification of restriction as regards mental state for the purpose of declaring an enlisted man to be qualified for full general duty. Assignments are governed largely by the geographic location in which the men desire to be stationed, and it is the responsibility of each installation to utilize the men in best possible manner considering their limitations as shown on W. D., A. G. O. form 20 and Disposition Board report included in records.

FOURTEEN SOLDIERS WHO VOLUNTARILY CONTRACTED SANDFLY FEVER FOR RESEARCH AWARDED MEDALS

The Legion of Merit was recently awarded to fourteen soldiers who volunteered to submit to experiments which greatly increased the knowledge of sandfly fever, a disease encountered by American fighting men in tropical and semitropical regions. The soldiers were all infected with the disease during the experiments. The fever was produced in some of the volunteers by small injections of blood from individuals who had it and in others by deliberate exposure to repeated bites of infected sandflies. The carrier is a fly about an eighth of an inch long, and it is only the female of the species which bites. The experiments disclosed that the virus causing the fever in the Middle East was the same as that contracted by our soldiers in Sicily.

ARMY AWARDS AND COMMENDATIONS

Captain William Allison Stem

Capt. William Allison Stem, formerly of Fayetteville, N. C., and now a flight surgeon for the twelfth air force in the European theater, has been commended by his commanding officer. The commendation, in part, reads "Capt. William Stem is commended for his exceptionally meritorious service as squadron flight surgeon during the Tunisian, Pantellerian, Sicilian and Italian campaigns from Nov. 12, 1942 to Jan. 31, 1944. His ability to handle delicate situations has caused him to become the primary morale building factor in his organization." Dr. Stem graduated from the University of Tennessee College of Medicine, Memphis, in 1936.

Captain Joseph J. Nannariello

Capt. Joseph J. Nannariello, formerly of Hoboken, N. J., was awarded the Silver Star Medal for administering first aid to nine Yanks wounded by enemy gunfire. Fighting in ravines at close quarters, the nine were felled by a burst of Jap fire. A call came for stretcher bearers, but Captain Nannariello realized that moving the men to first aid stations would require considerable time and possibly be dangerous for the wounded men. Without hesitation he moved up and administered first aid. The citation states that "this was done within a few yards of the enemy position and with no protection or cover other than a thin fringe of trees and grass." Dr. Nannariello graduated from Georgetown University School of Medicine, Washington, D. C., in 1941 and entered the service in May 1942.

Captain Mark W. Dick

The Bronze Star Medal was recently awarded to Capt. Mark W. Dick, formerly of Grand Rapids, Mich., and was accompanied by the following citation: "While enemy mortar shells exploded around him, Captain Dick ran 40 yards and crawled under a barbed wire entanglement to reach a seriously wounded soldier. Finding that the nature of the man's wounds made it impossible to move him to the protection of a pillpox, Captain Dick unhesitatingly exposed himself and stood in an upright position to administer medical treatment during the intense mortar barrage." Dr. Dick graduated from the University of Michigan Medical School, Ann Arbor, in 1932 and entered the service May 6, 1942.

PROCUREMENT AND ASSIGNMENT SERVICE FOR PHYSICIANS, DENTISTS AND VETERINARIANS

HOSPITAL STAFFS

The directing board of the Procurement and Assignment Service recently emphasized that hospitals will not have residents of matured experience if they do not make every effort to keep women or disqualified men on their staffs for longer periods of time, and if they do not do this they will find themselves in a situation which the Procurement and Assignment Service cannot correct for them. Some hospitals are saying that they cannot get physically disqualified residents. These hospitals, on the other hand, have never listed their names in THE JOURNAL as having vacancies. Experience indicates that this listing results in a large number of applications, which must be evaluated; but it is the only way in which physically disqualified house staff can be obtained, and it must be obtained as far as possible if any significant maturity of such staff is to exist.

Additional reasons for following the recommendation is the possibility that there may be slight increases in quotas of interns and corresponding decreases in quotas of residents for the period of July 1945 to March 1946. Present contracts for that period should be made flexible enough to arrange for some such change in quotas.

HOSPITALS NEEDING INTERNS AND RESIDENTS

The following hospitals have indicated to the Council on Medical Education and Hospitals that they have not completed their house staff quota allotted by the Procurement and Assignment Service:

(Continuation of list in THE JOURNAL August 12, page 1047)

COLORADO

Colorado Psychopathic Hospital, Denver. Capacity, 78; admissions, 884. Dr. Charles A. Rymer, Acting Director (fellowships—psychiatry).

MICHIGAN

Eloise Hospital and Infirmary (William J. Seymour Hospital), Eloise. Capacity, 6,432; admissions, 7,095. Dr. Charley J. Smyth, Medical Director (residents—surgery, medicine, eye, ear, nose and throat, September 1).

MINNESOTA

Asbury Hospital, Minneapolis. Capacity, 165; admissions, 5,316. Miss Lydia A. Miller, Superintendent (interns, mixed residents).

PENNSYLVANIA

Fitzgerald-Mercy Hospital, Darby. Capacity, 191; admissions, 5,380. Sister Mary Lioba, Superintendent (3 interns, October 1).

MISCELLANEOUS

RAPID, SIMPLIFIED METHODS FOR TREATING GONORRHEA WITH PENICILLIN

Physicians of the U. S. Public Health Service, Federal Security Agency, recently reported on the rapid, simplified methods for treating gonorrhea with penicillin, which require no hospital care for the patients and which can be used conveniently by physicians in private practice or by clinics. One schedule of five treatments can be completed in only seven and one-half hours; another requires additional treatment the morning of the second day. The use of either of these methods, or modifications of them, may make possible wider application of penicillin treatment to the problem of gonorrhea control in the national program to combat venereal diseases where time and circumstances do not permit the use of standard twelve to twenty-one hour treatment schedules. The new methods have been effective in almost as large a percentage of cases as the standard schedules.

The "outpatient" schedules of treatment were developed by Dr. C. J. Van Slyke of the Public Health Service Venereal Disease Research Laboratory, Staten Island, and Dr. S. Steinberg of the U. S. Marine Hospital, New York. The race of the patients, the length of time they had the disease and previous treatment with sulfonamide drugs apparently had no effect on the results of penicillin treatment. Many of the patients volunteered the information that a definite sense of well-being followed the injections of penicillin.

THE ASSOCIATION OF MILITARY SURGEONS OF THE UNITED STATES

At the fifty-second annual meeting of the Association of Military Surgeons of the United States, to be held at the Hotel Pennsylvania, New York City, November 2-4, addresses will be made by the nation's three surgeons general, the chief of the Veterans Administration, the commanding general of the Second Service Command and New York City's mayor. Other features of the meeting will be forum lectures, discussion panels, military and commercial scientific exhibits and medical motion pictures. The arrangements are under the direction of Col.

Lucius A. Salisbury, president of the Association of Military Surgeons of the United States, and Col. Charles M. Walson, chairman of the convention program committee.

The forum lectures will cover war surgery, chemotherapy, communicable diseases, neuropsychiatry, medical problems in theaters of operation, dental rehabilitation and equine encephalitis. Topics for discussion panels, which will be integrated with the lectures, are "War Wounds, Burns and Fractures," "Neuropsychiatric Problems," "Treatment and Prevention of Venereal Diseases," "Penicillin and Sulfonamide Therapy," "Orthopedic and Reconstruction Therapy," "Neurosurgical Problems," "Tropical Diseases in the Army and Navy" and "Aviation Medicine."

DISTRICT OFFICES OF THE DIVISION OF NURSE EDUCATION

Dr. Thomas Parran, Surgeon General, U. S. Public Health Service, recently announced that district offices of the Division of Nurse Education, U. S. Public Health Service, are being opened in seven districts throughout the country. Where space permits, these officers will be located in the district offices of the U. S. Public Health Service. A nurse education consultant will be in charge of each district office. In given schools of nursing, Cadet Nurse Corps accounts will be verified by auditors from the district office. Representatives resident in the district offices will furnish publicity guidance and material for the recruitment of student nurses.

The first district office of the Division of Nurse Education was officially established in New Orleans at the U. S. Public Health Service District No. 4, 1307 Pere Marquette Building, 150 Baronne Street, with Miss Elsie T. Berdan, nurse education consultant, in charge.

The New York District No. 1 was opened July 17 at 119 West 57th Street. Miss Mary O. Jenny is nurse education consultant.

In Chicago District No. 3, the Division of Nurse Education office is located in the City Hall Square Building, 139 North Clark Street, and is under the supervision of Miss Jane E. Taylor, nurse education consultant.

The San Francisco office, in District No. 5, is at 1223 Flood Building, with Miss Lyndon McCarroll in charge.

Other Divisions of Nurse Education District offices will be established in the District of Columbia, Kansas City and Denver.

HOSPITAL PROJECTS RECOMMENDED IN TWENTY STATES

Hospital projects in twenty states to provide 16,000 additional beds, to cost $70,000,000, have been recommended to the Federal Board of Hospitalization by the Veterans Administration. The new beds would include 5,000 for neuropsychiatric patients, 3,000 for tuberculosis victims and 8,000 for general medical and surgical cases. The announced program is the first in the $500,000,000 hospital setup authorized in the "G.I. Bill of Rights" law. The new hospital facilities will be located in New Hampshire, Rhode Island, Delaware, Virginia, Florida, Michigan, Kentucky, Louisiana, Mississippi or Alabama, eastern Kansas or northern Missouri, eastern Montana or western North Dakota, Colorado, California, Texas, Washington, New York, Georgia, Ohio, Pennsylvania and Illinois.

DOCTORS USE OWN BLOOD TO SAVE WOUNDED SOLDIER

Two British army doctors each took a pint of blood from the other to save a seriously wounded soldier after the Germans had bombed a dressing station on the Normandy beach. The two physicians, Capt. D. A. Squire of Bristol and Capt. Hugh Conway of Beith, Scotland, had already sent for a fresh supply for their dwindling stock of plasma. Before it reached them, however, a bomb demolished the evacuation tent, killing some stretcher bearers and critically wounding others. There was no time to wait for the plasma, so the two doctors gave their own blood to one of the most badly wounded, thus saving his life.

PUBLIC HEALTH UNDER HITLER

NDZ of April 27, 1944 (Germany) reports that the new regulation concerning the period of service for RAD girls and the inspection which is at present being carried out provide an opportunity—a fact which will reassure many mothers of RAD girls—to draw attention to the measures which are being taken to safeguard the health of the RAD girls. The war has increased the scope of the RAD for girls on a scale such as even experts thought improbable. Work in the camps continues to consist in helping overburdened peasants' wives and mothers. The introduction of the Auxiliary War Service and the employment of RAD girls on air defense have placed yet greater emphasis on the girls' share in the war effort.

As the majority of the girls are unaccustomed to physical work and must be able to adapt themselves to camp life, definite standards must be applied in their selection. For this purpose the RAD has issued directives according to which service and labor qualifications are assessed. These directives are very helpful to the men and women doctors who carry out the inspection and the recruitment examinations. The camp doctor makes a thorough examination immediately on the girls' arrival at the camp, and the girls remain in the camp only if their health is altogether up to standard. Local general practitioners or those living nearby do duty as camp doctors. At the consulting hours and health rallies the camp doctor supervises the health of the girls. Physical defects are thus quickly recognized and remedied. Light cases receive treatment in the camp sick bay. The camp doctor is aided by a specially trained woman health assistant. All the camps are well equipped with medicaments and medical appliances.

Patients who suffer from a prolonged or more serious illness are taken to a hospital or district sick bay of the RAD for girls. The district sick bays have up to 100 beds; they have modern equipment and enable the women doctors of the RAD on duty there to use a variety of methods in examining and treating the girls. But the woman doctor in the RAD is mainly concerned with physical fitness. She is out to forestall illness and to increase performance by improving the general health of the girls. The RAD girls are trained to lead healthy lives. There are ample facilities for washing as well as shower baths; work, time off and sleep alternate suitably, food and clothing are appropriate, and the physical training is well planned. If RAD girls work outside the camp, the families to whom they go are first medically examined, so that here too there is no question of danger to the girls' health.

All these measures are of use only if the girls' minds too remain healthy. Girls who constitute a danger to the community in that respect are immediately removed. The responsibility of the RAD to the parents is too great to allow a few outsiders to jeopardize educational success. There is hardly a family which watches so carefully over the health of the girls as does the RAD. It spares no effort in seeing to the girls' health, and even anxious parents may rest assured that their daughter is well looked after. The RAD enjoys the cooperation of the entire medical profession and also trains its own women doctors in courses which are free of charge.

Pester Lloyd of April 18 (Hungary) states that, according to Laszlo Endre, the problem of doctors is a serious one. There are 13,000 doctors, including 4,000 Jews, 1,000 women doctors and 1,000 doctors who no longer practice. On principle, Jewish doctors are allowed to treat only Jewish patients, but this cannot be done in practice owing to the shortage of doctors.

The *Pariser Zeitung* of March 25, 1944 states that Dr. Grasset has made declarations to the press regarding the state of tuberculosis in France. In 1938 cases of tuberculosis amounted to 143 per 10,000 inhabitants, while in 1944 the number has risen to 170. This is due partly to undernourishment through the war and partly to psychologic causes, but in particular to the Anglo-American terror raids. In 1939 it was possible to accommodate 37,000 persons in sanatoriums, but recently the number of beds has proved insufficient. A number of spas are now to be turned into resorts for the treatment of tuberculosis.

ORGANIZATION SECTION

WASHINGTON LETTER

(From a Special Correspondent)

Aug. 14, 1944.

Proposed Health Center for Nation's Capital

How to bring hospital facilities of the nation's capital up to the level of Baltimore, Pittsburgh and other cities in the United States is now occupying the attention of national and local officials here. House and Senate subcommittees on health and hospitals have proposed establishment of a vast health center on a 20 acre plot of land, with existing hospitals to be integrated, though retaining their independent status.

Meantime, a House committee has already reviewed the situation and concluded sittings with a request for further basic information, and today (August 14) a subcommittee of the Senate District Committee begins hearings on a bill which is designed to modernize completely existing hospital services.

The capital is now a city of hospital contrasts, with the great Navy Medical Center at Bethesda, Md., and Walter Reed General Army Hospital, serving the armed forces, but with only one strictly modern private hospital for civilian patients. That one up to date institution is relatively small and in a downtown section barring expansion. Not only has Washington inadequate and overcrowded civilian hospitals, according to Senator Millard E. Tydings (Democrat, Maryland), but 50 per cent of the patient population here is housed in buildings which are serious fire hazards. The hospital bill was introduced in the Senate by Senator Tydings, with Senator Theodore G. Bilbo (Democrat, Mississippi), and in the House by Representative Jennings Randolph (Democrat, West Virginia) and Representative Thomas D'Alesandro Jr. (Democrat, Maryland). Under the bill a hospital center would be established, and into it larger existing hospitals would be merged and other smaller hospitals could be affiliated, all on a voluntary basis. Senator Tydings said that these unusual merger features were the result of a six months study by a group of public spirited citizens, who have made surveys, exchanged views and made a concerted effort to formulate the best plans for adequate and economically operated hospital facilities here.

The hospital center, as proposed, would not have more than 1,500 beds, with complete facilities for diagnosis and treatment in all specialties. Each merged institution could thus care for its own clientele, with major economies resulting from consolidation and coordination, sponsors submit. Participating hospitals would be permitted to retain their identities as corporations, safeguarding endowments and other resources as well as tradition and good will. Overall management would be vested in a joint administrative board. It is suggested that an ideal site would cover 20 acres, which should be close to transportation facilities. Possible locations have been surveyed by the National Capital Park and Planning Commission. A dozen with suitable acreage have been recommended.

Representative D'Alesandro has called on all federal and Washington local agencies to make an immediate survey of local postwar health aid and at an open hearing, as head of the House District Subcommittee on Health and Hospitals, he appealed for postwar improvement proposals from District of Columbia government, the District Health Department and the U. S. Public Health Service. He did not indicate at the hearing that a health center was proposed. District commissioner Guy Mason advocated rebuilding of Providence, Georgetown, George Washington and Garfield hospitals and modernization of almost all other private hospitals as a first step in providing adequate protection for the expanding metropolitan population. He based his recommendations on an independent survey made several years ago by Charles F. Neargaard, New York hospital consultant. Before the House subcommittee hearing Representative D'Alesandro had proposed that a gigantic health center be built here after the war, but inability of witnesses at the House subcommittee hearing resulted in the congressman's request for further basic information.

MEDICAL ECONOMIC ABSTRACTS

COMMUNITY HEALTH AND WELFARE EXPENDITURES IN WARTIME

Changes in community health and welfare expenditures in wartime, as described in a report of the Children's Bureau, show significant changes in several trends that have existed for a number of years.[1]

The study covers twenty urban areas distributed throughout the United States. The choice of localities was influenced to some degree by the existence of social service agencies which would undertake the collection of data. The disappearance of unemployment and resulting higher standards of living, together with military operations, have brought about changes in organization and administration in some fields of public service.

Family welfare and relief decreased in twenty-six out of thirty areas and cost $360,000,000 in 1940 and $221,000,000 in 1942. "The outstanding increase in expenditures in this field of service was for the American Red Cross." The largest increase has been 20 per cent in health service. Other increases are in group work and leisure time activities 18 per cent, child welfare service 9 per cent and "planning, financing and coordinating services" 8 per cent.

"Health was the only major field of service in which increases occurred in every area." The increase in child welfare work was due directly to withdrawal of parents and others responsible for such care for military service and war production.

"Expenditures for health services were higher in 1942 than in 1940 in every area." The total increase was almost 170 million. There was also a very significant change in the source of funds.

"Increased ability of patients to pay for service affected significantly the volume of hospitalization and, hence, the expenditures of hospitals. In 1942 hospital expenditures comprised 84 per cent of the total expenditures for health services. Including fees from patients, total hospital expenditures advanced 23 per cent between 1940 and 1942. Expenditures excluding fees increased only 8 per cent. In 1942 many people were able to pay for hospitalization either through direct payment or through hospital insurance plans. More than 10 million persons in the nation were participating in some type of hospital prepayment insurance plan at the end of 1942, compared with about 6 million at the end of 1940. Because of hospital insurance and increased earnings, many people could afford to obtain medical treatment promptly, whereas in prior years their hospitalization had to be postponed or was not received at all.

"Increased ability to pay, rather than increased morbidity," caused an increase in hospitalization that often exceeded the capacity of existing hospitals. In services supported by government or philanthropy there was a general decline. This was especially true of clinics. The main increase of public expenditures occurred in the institutional care of tuberculous and mental patients.

"Payments from recipients of service were a more important source of funds in financing the health programs in the thirty areas than in financing any of the other major fields of service."

In general, there was a decline in expenditures by the federal government and an increase in support from local agencies. Even within the local field "a drop in proportion of local tax funds and a rise in fees dominated the pattern of change shown in expenditures for clinic service, which is the health service accounting for the largest part of health expenditures other than those for hospital care."

1. Schwartz, Edward E., and Sherman, Eloise R.: Community Health and Welfare Expenditures in Wartime, Children's Bureau, 1944.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ILLINOIS

Edwin Hamilton Honored.—The Kankakee County Medical Society gave a dinner in honor of Dr. Edwin S. Hamilton at the Kankakee Country Club, June 20, in appreciation of his many services to organized medicine. Guests at the dinner included officers of the Illinois State and Chicago medical societies. Dr. Hamilton was presented with a traveling bag.

Chicago

Loyola Alumni Meetings.—The Loyola University Medical Alumni Association will hold a dinner during the State Medical Society of Wisconsin meeting in Milwaukee, September 18. The dinner will be in the Pere Marquette Room of the Hotel Schroeder. Dr. George W. Leitch, Milwaukee, is chairman of the local arrangements committee and Dr. Charles E. Pechous, Kenosha, state counselor. The association will also hold a meeting during the Michigan State Medical Society meeting in Grand Rapids, September 28, in the Hotel Pantlind. Dr. Christian G. Krupp, Grand Rapids, is local chairman and Dr. Lawrence R. Banner, Kalamazoo, state counselor. The association will also hold a reunion during the Indiana State Medical Association meeting in Indianapolis, October 3. Dr. Frank B. Fisk, Indianapolis, is local chairman and Dr. Homer B. Gable, Monticello, state counselor.

Medical School Honors Graduating Class.—The University of Chicago School of Medicine will hold a banquet in honor of the 1944 graduating class in the Crystal Ballroom, Windermere East Hotel, August 31. Alumni are invited. Among the speakers at the dinner, at which Dr. Lester R. Dragstedt, professor of surgery, University of Chicago School of Medicine, will be the toastmaster, will be Brig. Gen. Percy J. Carroll, M. C., who will discuss "Medical Service in the Southwest Pacific Theater of War"; David Hellyer, president of the class of 1944, who will speak for the class; Dr. Victor Johnson, Secretary of the Council on Medical Education and Hospitals of the American Medical Association, and professorial lecturer in physiology, for the alumni, and Roland W. Harrison, Ph.D., acting dean, Division of Biological Sciences, for the faculty. Brigadier General Carroll will be introduced by Col. John R. Hall, M. C. A feature of the banquet will be the presentation of the year book, the first of its kind, which was started by the present class.

Mrs. Bevan's Will.—The will of Mrs. Anna L. Bevan, widow of Dr. Arthur Dean Bevan, disposes of $550,000, most of which will go into a trust fund benefiting the Presbyterian Hospital of Chicago, where her husband was for many years chief surgeon. Mrs. Bevan died July 31. Three bequests to charity include $10,000 to the Country Home for Convalescent Crippled Children, West Chicago, $5,000 to the Visiting Nurse Association and $5,000 to the Ridge Farm Preventorium of Lake Forest. In addition there is a provision for $10,000 to set up the Arthur Dean Bevan Endowment Fund for the Hospital Association of Lake Forest, the income to be used perpetually for teaching and research in the hospital's surgery department. The residue of the estate, after other bequests, will approximate $458,000 and will go into a trust fund with the First National Bank of Chicago as trustee, the income to go perpetually to the Presbyterian Hospital for teaching and research in surgery. After the death of one beneficiary of the will, the money provided will go to the Presbyterian Hospital. The trust also will be known as the Arthur Dean Bevan Endowment Fund.

IOWA

Personal.—Morningside College, Sioux City, recently conferred the honorary degree of doctor of science on Drs. Don H. O'Donoghue, Oklahoma City, and Archibald F. O'Donoghue, Sioux City. The degrees were bestowed by Dr. James H. O'Donoghue, Storm Lake, father of the two physicians.

Special Society Election.—Dr. Chester L. Putnam, Manchester, was chosen president-elect of the Iowa Public Health Association at its eighteenth annual meeting recently in Des Moines and Paul J. Houser, M.S., Des Moines, was installed as president. Hazel Roberts, R.N., Manchester, was named vice president and Dr. Carl F. Jordan, Des Moines, is secretary.

KENTUCKY

Memorial Issue for Dr. McCormack.—The *Kentucky Medical Journal* for August was designated the Arthur Thomas McCormack memorial number in honor of the late secretary of the state society and state health commissioner. The issue contains various tributes and eulogies in honor of the late physician. Dr. McCormack died Aug. 7, 1943.

LOUISIANA

Otto Schales Joins Ochsner Foundation.—Otto Schales, D.Sc., research associate in medicine and tutor in the biochemical sciences at Harvard Medical School and director of the clinical laboratories of the Peter Bent Brigham Hospital, Boston, has been appointed director of chemical research of the Ochsner Foundation and director of the biochemical laboratory at the Ochsner Clinic, New Orleans.

Special Society Election.—Dr. John R. Schenken, professor and head of the department of pathology and bacteriology, Louisiana State University School of Medicine, New Orleans, was elected president of the Louisiana Association of Pathologists at a meeting at the Charity Hospital, July 6, and Dr. Emma S. Moss, assistant professor of pathology and bacteriology at the medical school, was elected secretary-treasurer.

MASSACHUSETTS

Admission of Women Students at Harvard.—Women students will be admitted to Harvard Medical School, Boston, for the first time if the university's board of overseers sanctions a move by the Harvard Corporation on September 25, according to the New York *Times*. The medical school faculty voted to admit women last year, but the Harvard Corporation opposed the action. The corporation recently reversed its decision, and the matter now goes before the overseers, who are expected to grant approval, it was stated.

Medicolegal Conference and Seminar.—The Massachusetts Medicolegal Society in conjunction with the medicolegal departments of Harvard, Boston University and Tufts medical schools will hold an all day conference at the Mallory Institute of Pathology, Boston City Hospital, October 4. It will include lectures, demonstrations and informal discussions concerning many subjects in legal medicine, particularly stressing some of the more recent procedures. This meeting will be open to any registered physician, lawyer, police official, senior medical student or other medical investigator who may be interested and care to register. No limit in number has been made. There will be no fee for registration. While advance application is not essential, it would be helpful to those arranging the conference if notice of intention to attend is sent prior to October 1 to Dr. William H. Watters, department of legal medicine, Harvard Medical School, Boston.——The Harvard Medical School Courses for Graduates, with the cooperation of the medical schools of Boston University and Tufts College, offers a seminar in legal medicine, October 2-7, planned particularly for medical examiners and coroners physicians but open to any other suitable graduate of an approved medical school. The course will be practical rather than theoretical and will consist of necropsy demonstrations, technic and interpretation of laboratory tests, study of the day by day cases of a medical examiner, round table conferences and the many subjects now included in the widening field of legal medicine. In order that each participant may receive the maximum benefit, the enrolment has been limited to fifteen. For the seminar the fee is $25. Application should be made on or before October 1 to Harvard Medical School, Courses for Graduates, 25 Shattuck Street, Boston 15.

MINNESOTA

Prosecution of Abortionists.—The Minnesota State Board of Medical Examiners reports that on July 6 Michael J. Koehler, a licensed chiropractor of Minneapolis, was sentenced to a term of one year in the Minneapolis Workhouse after pleading guilty to a charge of abortion. On July 8 Lillian Kruse Flick, Minneapolis, was sentenced to a term of two years in the Women's Reformatory at Shakopee following a similar plea to a similar charge. Mrs. Flick also pleaded guilty to having a prior conviction of a felony.

Personal.—Dr. Francis E. Harrington, Minneapolis, who has been acting superintendent of the Minneapolis General Hospital, has accepted the position on a conditional basis for the duration of the war, pending the appointment of a full time superintendent. Dr. Harrington recently retired as health commissioner of Minneapolis.——Dr. Herbert B. Aitkens was

recently honored at a dinner given by the community of Le Center, where he had been practicing for fifty years; he was presented with a purse to cover expenses of a trip to his native England and a plaque carrying the inscription "in appreciation of fifty years of faithful service as family doctor in Le Center since April 9, 1894." He was given honorary membership in the American Legion post and life membership in the Le Center Community Club. Dr. Aitkens has been a member of the local school board for forty years and president for more than thirty.——Dr. David E. McBroom has resigned as superintendent of the Minnesota Colony for Epileptics, Cambridge, to accept a similar position at the State School and Home for Feebleminded, Redfield, S. D.

Northern Minnesota Meeting.—The Northern Minnesota Medical Association will hold a scientific meeting and business session at the Androy Hotel, Hibbing, August 26, under the presidency of Dr. Herbert H. Leibold, Parkers Prairie. Among the speakers will be:

Dr. Orwood J. Campbell, Minneapolis, Fractures of the Upper Extremities.
Dr. Moses Barron, Minneapolis, Recent Advances in Medical Therapeutics.
Dr. Lawrence E. Schneider, Duluth, Some Psychiatric Conditions Seen by the General Practitioner.
Dr. Walter C. Alvarez, Rochester, Hints in Diagnosing Puzzling Abdominal Pain.

A luncheon session will be addressed by Dr. William A. O'Brien, Minneapolis; Dr. Alvarez; Dr. Willard L. Burnap, Fergus Falls, and Dr. Edward L. Tuohy, Duluth, and a clinical x-ray pathologic conference will be held by Dr. Tuohy, and Drs. John R. McNutt, George L. Berdez and Arthur H. Wells, Duluth. Dr. Richard N. Jones, St. Cloud, is secretary-treasurer of the association.

MONTANA

State Medical Appointments.—Dr. Edmund A. Welden, Lewistown, has been appointed to the Montana State Board of Medical Examiners to succeed Dr. Alonzo T. Munro, who has moved to the state of Washington. Dr. Charles J. Bresee, Great Falls, has been reappointed a member of the state department of public health, according to the *Journal-Lancet*.

Refresher Course in Obstetrics.—Dr. John L. Parks, chief of the department of obstetrics and gynecology, Gallinger Municipal Hospital, Washington, D. C., is giving a series of courses in obstetrics throughout the state under the auspices of the division of maternal and child health of the state department of public health in cooperation with the Medical Association of Montana. The local county medical society in the different centers chosen for the lectures is host to the meeting.

NEW YORK

Edward Bausch Dies.—Edward Bausch, LL.D., chairman of the board of Bausch & Lomb Optical Company, died in Rochester, June 30, aged 89.

Association of School Physicians.—Dr. Clarence A. Greenleaf, Olean, was recently elected president of the New York State Association of School Physicians; Dr. Edgar Bieber, Dunkirk, was reelected vice president and Dr. Clara Adele Brown, Oswego, secretary-treasurer.

Teaching Days on Poliomyelitis.—On August 17 a teaching day on poliomyelitis was conducted at Syracuse University College of Medicine at Syracuse, under the sponsorship of the university, the Cayuga, Cortland, Madison, Oneida, Onondaga and Oswego county medical societies, the state medical society and the state department of health. Among the speakers will be Drs. James E. Perkins, Albany, on "Epidemiology of Poliomyelitis"; John F. Landon, New York, "Clinical Features—Pathology, Diagnosis and General Treatment"; William B. Snow, New York, "Physical Therapy in the Acute and Convalescent Stages," and Halford Hallock, New York, "Orthopedic Measures." A similar program was held at the Cumberland Hotel, Plattsburgh, August 14, under the auspices of the Clinton, Essex, Franklin and St. Lawrence county medical societies, the state medical society, the state department of health and the Clinton County chapter of the National Foundation for Infantile Paralysis, at which the speakers were Drs. A. Clement Silverman, Syracuse; Arno D. Gurewitsch, New York, and R. Plato Schwartz, Rochester. An evening session was addressed by Dr. Perkins, who is director of the state division of communicable diseases. A similar program will be presented in Alexandria Bay, August 24, under the auspices of the Hamilton, Herkimer, Jefferson and Lewis county medical societies, the state medical society, the state department of health and the Jefferson County chapter of the National Foundation for Infantile Paralysis.

New York City

Grant for Mental Hygiene.—The Commonwealth Fund has given $10,000 to the National Committee for Mental Hygiene to provide fellowships to train psychiatrists for work with children, it is reported. Both basic training and advanced study as well as refresher courses will be provided by fellowships.

Graduate Fortnight.—"Infections and Their Treatment" will be the theme of the graduate fortnight of the New York Academy of Medicine, October 9-20. The program will consist of morning panel discussions, afternoon hospital clinics, evening addresses and scientific exhibits and demonstrations. The speakers at evening sessions will include:

Dr. Colin M. MacLeod, Factors Which Influence the Choice of Antibacterial Agents.
Brig. Gen. Hugh J. Moran, M. C., Sulfonamides in the Control of Streptococcic Infections.
Comdr. Alvin F. Coburn (MC), Mass Sulfadiazine Prophylaxis of Respiratory Diseases in the U. S. Navy.
Dr. Francis G. Blake, New Haven, Conn., Rickettsial Infections in the Southwest Pacific Area.
Brig. Gen. Stanhope Bayne-Jones, M. C., Infectious Hepatitis.
Dr. Joseph E. Moore, Baltimore, Chemotherapy of Syphilis.
John F. Mahoney, senior surgeon, U. S. Public Health Service, Chemotherapy of Gonorrhea.
Dr. Russell L. F. Cecil, Chemotherapy in Acute Upper Respiratory Infections.
Dr. William S. Tillett, Use of Penicillin in the Treatment of Pneumococcic Infections.
Dr. John H. Dingle, director, commission on acute respiratory diseases, board for investigation of epidemic diseases, U. S. Army, Primary Atypical Pneumonia.
Dr. J. Albert Key, St. Louis, Treatment of Osteomyelitis.
Capt. Lewis K. Ferguson (MC), Treatment of Burns and War Wounds.
Dr. Harrison F. Flippin, Philadelphia, Recent Developments in Sulfonamide Therapy.
Dr. Charles A. Janeway, Boston, Use of the Immune Globulin Fraction of Human Plasma in Acute Infections.
Dr. Wiley D. Forbus, Durham, N. C., Reactions of Tissues Following Infection and Their Place in an Environmental Conception of the Nature of Disease.
Lieut. Comdr. Harold J. Harris (MC), Brucellosis (undulant fever) Problems of Diagnosis and Treatment.

The Ludwig Kast Lecture will be delivered by René J. Dubos, Sc.D., on "The Mode of Action of Antibacterial Agents" and the Carpenter Lecture by Dr. Thomas Francis Jr., Ann Arbor, Mich., on "Influenza—Methods of Study and Control." The panel discussions will be devoted to pneumonia types and their response to various forms of chemotherapy, treatment of syphilis and gonorrhea and treatment of infections of the eye, ear and upper respiratory tract.

NORTH CAROLINA

Personal.—Dr. James J. Croley, Plymouth, has resigned as head of the district health department serving Tyrrell, Hyde and Washington counties.——Dr. Ottis L. Ader, Walkertown, has been named director of the venereal disease clinic of the Durham City-County Health Department, succeeding Dr. Roy H. McDowell, Dunham.——Dr. Robert B. C. Franklin, Mount Airy, has resigned as health officer of Surry County to enter military service.——Dr. James E. Hemphill has been appointed associate professor of radiology at the Bowman Gray School of Medicine of Wake Forest College, Winston-Salem, effective July 1.

Opening of Schools Delayed Because of Poliomyelitis.—On August 4 the executive committee of the state board of health passed the following resolution:

In view of the grave situation which exists in North Carolina because of the epidemic of poliomyelitis, of which there have been up to this time 453 cases reported in forty-eight counties since June 1, and which has resulted in twenty-one known deaths, it is the sense of this committee that the local boards of education and those charged with the administration of all private and parochial schools defer the opening of any and all such schools until September 18, and then only if the epidemic has subsided to such an extent as to permit their opening with safety.

The action was taken after consultation with Dr. James P. Leake, Washington, D. C., epidemiologist of the U. S. Public Health Service. A release from Dr. Carl V. Reynolds, Raleigh, state health officer, stated that in 1935 the poliomyelitis epidemic began in May and had subsided by September. However, this year the outbreak did not begin until June; July registered more cases than were reported in July 1935, and there is a possibility that August of this year will show a greater number of cases than August 1935, throwing the period of abnormal incidence into the school year. On August 5 poliomyelitis had been reported in four additional counties, all in the eastern part of the state, these counties being Hyde, Pitt, Beaufort and Bertie. Dr. Reynolds stated that everything humanly possible has been done to hospitalize every infantile paralysis case in the state. At the time of his report on August 5 there were more than 150 patients at the Hickory center, nearly 60 at Charlotte and about 50 at Gastonia, all of whom are being given care never before given anywhere

in the history of the disease. At the time of his report there was an estimated 90 per cent of the state's children under voluntary quarantine through the cooperation of parents in keeping their children at home.

NORTH DAKOTA

Special Society Election.—At the recent twenty-sixth annual meeting of the North Dakota Academy of Ophthalmology and Otolaryngology Dr. Wilbur L. Diven, Bismarck, was elected president, Dr. Clarence W. Robertson, Jamestown, vice president, and Dr. Albert E. Spear, Dickinson, secretary-treasurer, to succeed Dr. Frederick L. Wicks, Valley City, who resigned after holding the position for twenty-five years (THE JOURNAL, July 29, p. 921).

OHIO

Latin Americans at Health Museum.—Drs. Mario Quieroz, in charge of the federal health museum in Brazil, and Pedro B. de Arauyo Penna, an officer of the National Public Health Education Service of Brazil, are spending a number of weeks at the Cleveland Health Muscum as interns, under the auspices of the Office of the Coordinator of Inter-American Affairs.

School and Community Health Education.—The Ohio Department of Education in cooperation with the Ohio Department of Health will conduct a school and community health education project throughout the state, beginning with the fall term in September. Financed by a grant from the W. K. Kellogg Foundation of Battle Creek, Mich., funds allotted to the state department of education are to be specifically expended for workshops, inservice training of teachers, health conferences, publications, outline of the course of study and the employment of a full time health education consultant to supervise the project on a state level. Main units to be included in the project are helping students to meet general health objectives, helping students to meet health objectives for special wartime services, family health, health agencies, community health, the function of the school health program and administration of the health education program.

Dr. Gerstenberger to Devote Full Time to Writing.—Dr. Henry J. Gerstenberger has been granted a leave of absence as director of the Babies and Childrens Hospital and director of pediatrics at Western Reserve University School of Medicine, Cleveland. Dr. John A. Toomey, clinical professor of pediatrics and contagious diseases at the medical school, will be acting director of the hospital and acting director of pediatrics at the medical school. He will also take over Dr. Gerstenberger's activities as administrator of the contagious division at City Hospital, Cleveland, where he is physician in charge of the division at the present time. The change will be effective August 26. Dr. Gerstenberger will devote the remaining years of his active career as professor of pediatrics at the medical school to publishing results of his extended researches and to do other writing. In making the announcement of the change Winfred G. Leutner, LL.D., president of Western Reserve, stated that Dr. Gerstenberger has been collecting photographs, roentgenograms, clinical records and scientific data, but the pressure of his many activities made it impossible for him to carry out his plans to prepare these for teaching and publication. It is hoped that he will soon be able to write the history of the Babies and Childrens Hospital and the development of preventive and social medicine in Cleveland.

PENNSYLVANIA

Personal.—Dr. George B. Woods, Washington, who is 93 years of age, is credited with being the oldest graduate of Waynesburg College.——Dr. Wesley D. Richards, Bellevue, has been appointed a member of the state board for medical education and licensure.——A dinner was given to Dr. Harry J. S. Keim, Catasauqua, recently, in recognition of his completion of fifty years in the practice of medicine.

Philadelphia

New Professor of Pharmacology.—Dr. Lloyd D. Seager has been appointed professor of pharmacology and toxicology at the Woman's Medical College of Pennsylvania to succeed Ben King Harned, Ph.D., who has joined the research staff of Lederle Laboratories, Inc., New York. Dr. Harned has held the position since 1935. Dr. Seager served as senior instructor in pharmacology at St. Louis University School of Medicine from 1934 to 1939 and has been assistant professor of pharmacology at the University of Tennessee College of Medicine, Memphis, since 1939. He graduated at St. Louis University in 1934.

SOUTH DAKOTA

State Medical Election.—Dr. William Duncan, Webster, was chosen president-elect of the South Dakota State Medical Association at its recent annual meeting and Dr. Daniel S. Baughman, Madison, was installed as president. Dr. Roland G. Mayer, Aberdeen, is the secretary.

TENNESSEE

Changes in Health Officers.—Dr. William O. Bingham, Roan Mountain, has resigned as health officer of Carter County.——Dr. William B. Farris, Franklin, in charge of the Williamson County Health Unit, has accepted a similar position in Sumner County, effective June 1.——Dr. William B. Camp has been appointed director of the Bedford-Marshall County Health District.

Society Observes Fiftieth Anniversary.—The Upper Cumberland Medical Society held its fiftieth annual meeting in Cookeville, June 27-28, under the presidency of Dr. Sam B. McFarland, Lebanon. Among the speakers were:

Dr. Carl R. Crutchfield, Nashville, Management of Malignancies of the Colon and Rectum.
Dr. Roscoe C. Gaw, Gainesboro, Some of the Common Emergencies in General Practice and Their Management.
Dr. Edward D. Gross, Chestnut Mound, Pyelitis.
Dr. Charles T. Lowe, Lebanon, Management of Abnormal Obstetric Cases.
Dr. Thurman Shipley, Cookeville, Treatment of Varicose Veins and Ulcers by Sclerosis.
Dr. William A. Howard, Cookeville, Differential Diagnosis in Gallbladder Disease and Coronary Heart Disease.
Dr. John T. Moore, Algood, Some Unusual Cases of Continued Fever.
Dr. Joseph R. B. Branch, Macon, Ga., Medical Conditions in China and Japan.
Major John R. Neal, M. C., Penicillin.
Dr. Thayer S. Wilson, Gordonsville, Nerves—Not Psychoses.
Dr. Harrison H. Shoulders, Nashville, Management of Acute Intestinal Obstruction.
Dr. Henry L. Douglass, Nashville, Prostatic Hypertrophy.
Dr. Burnett W. Wright, Nashville, An Unusual Kidney Condition.

GENERAL

Society News.—The American Rheumatism Association has announced that its 1945 session will be held during the annual session of the American Medical Association in New York in June. The chairman of the program committee is Dr. Donald F. Hill, 4 East Congress Street, Tucson, Ariz. Dr. Loring T. Swaim, 372 Marlborough Street, Boston, is the acting secretary of the American Rheumatism Association.

Infantile Paralysis Fund.—The National Foundation for Infantile Paralysis received in its 1944 March of Dimes celebrations the total of $10,973,491, the greatest donation from the American public since the President's birthday celebrations were started. Last year's contributions totaled $5,527,590. In an announcement to the press August 6 Mr. Basil O'Connor, president of the National Foundation for Infantile Paralysis, stated that the disease now is prevalent or threatening outbreaks in twelve states: North Carolina, Kentucky, New York, Louisiana, Pennsylvania, Virginia, Tennessee, Ohio, Michigan, Maryland, Mississippi and Indiana. To date this year the number of cases is bigger than during the comparable period of 1943, when the United States suffered its "third worst" recorded epidemic of infantile paralysis. Half the amount of funds raised annually is retained by the three thousand county chapters for aid to poliomyelitis sufferers; the rest is sent to the foundation for research, epidemic aid and education.

Mississippi Valley Meeting.—The tenth annual session of the Mississippi Valley Medical Society will be held at the Pere Marquette Hotel, Peoria, September 27-28. Speakers on the "all Chicago" program on Wednesday will include:

Dr. Raymond B. Allen, Obligations of Practicing Physicians to Medical Education.
Dr. Warren H. Cole, Appendicitis.
Dr. Edward L. Compere, Treatment of Intertrochanteric Fractures of the Femur.
Dr. Loyal Davis, Experiences as Consultant in Neurological Surgery in the European Theater of Operations.
Dr. Newell C. Gilbert, The Clinical Use of Digitalis.
Dr. Andrew C. Ivy, The Rationale of Tests of Liver Function.
Dr. Eric Oldberg, Herniated Intervertebral Disks.
Dr. David Slight, Psychiatric Problems in Veterans.
Dr. Willard O. Thompson, The Fröhlich Syndrome.

Speakers on the "all St. Louis" program Thursday will include:

Lieut. Comdr. Henry C. Allen (MC), Recent Advances in Laboratory Diagnosis.
Dr. Hollis N. Allen, Curable Leukemia?
Dr. Edwin C. Ernst, Diagnosis and Treatment of Cancer of the Cervix.
Dr. Oswald P. J. Falk, Practical Points in Recognition and Management of Coronary Disease.
Dr. George T. Gafney, Cancer of the Rectum.
Dr. Louis H. Jorstad, Management of Lymph Nodes in Neck in Neoplastic Disease.
Dr. Roland M. Klemme, Neurosurgical Aspect of Essential Hypertension.

Capt. Alphonse McMahon (MC), Medicine in the South Pacific.
Dr. Arthur Wright Neilson, The Use of Massive Arsenotherapy and Penicillin in the Treatment of Syphilis.
Dr. Carl A. Wattenberg, The Kidney and Hypertension.

Drs. Edward Massie, Raymond O. Muether and Robert A. Moore will participate in a round table discussion on hypertension. Speakers at evening sessions will include Frederick M. Gillies, general superintendent, Inland Steel Company, East Chicago, Ind., on "We Must Retain Free Enterprise"; Dr. Everett P. Coleman, Canton, Ill.; Dr. Maurice C. Hennessy, Council Bluffs, Iowa, and Dr. Arthur S. Bristow, Princeton, Missouri.

Changes in Status of Licensure.—At a meeting of the California Board of Medical Examiners in San Francisco, June 26-29, the following actions were taken:

Dr. Archibald A. Atkinson, North Sacramento, found guilty of violation of the business and professions code and placed on five years' probation without narcotic privileges.
Dr. Arthur Anson Bird, Oakland, found guilty of violation of the business and professions code and his license revoked.
Dr. Charles Bacon Boudwin, Los Angeles, found guilty of violation of the business and professions code (alleged illegal operation) and his license revoked.
Dr. Gustav Adolph D. Eisengraeber, Minneapolis, found guilty under the business and professions code and his license revoked.
Dr. George C. Esker Jr., Wilmington, found guilty of violation of the business and professions code and penalty deferred to the August meeting of the board.
Dr. Edward M. Lundegard, Oakland, found guilty of violation of the business and professions code (alleged aiding and abetting of unlicensed practitioner) and placed on probation for one year, with the proviso that he report at the June 1945 board meeting.
Dr. Frederick H. C. Olberg, Sacramento, found guilty of violation of the business and professions code and placed on probation for five years, without narcotic privileges.
Dr. George Edmund P. Walton, Oakland, found guilty of violation of the business and professions code (alleged aiding and abetting of unlicensed practitioner) and placed on probation for one year, with the proviso that he report at the June 1945 board meeting.

The Massachusetts Board of Registration in Medicine reports the following:

Dr. Perry C. Baird Jr., Boston, license revoked June 21 because of a mental condition.

The Pennsylvania State Board of Medical Education and Licensure recently took the following actions:

Dr. Ralph H. Armstrong, Peckville, license revoked because of his conviction in the courts of Lackawanna County for committing abortion.
Dr. Alexander J. P. Conlen, Allentown, license revoked for advertising.

The Kansas State Board of Medical Registration and Examination on June 8 took the following actions:

Dr. John C. Curts, Kansas City, license revoked for conviction on a felony charge of narcotic violations.
Dr. Harold H. Theis, formerly of Norton, license revoked for morphine addiction; whereabouts unknown at present time.
Dr. Daniel R. Wilson, formerly of Kansas City, license restored.

LATIN AMERICA

Health Activities of Latin America.—*New Training Division of Inter-American Institute.*—A new training division in the Institute of Inter-American Affairs, created July 1, will administer the fellowship program of the food supply division as well as that of the health and sanitation division, according to the latter's *Newsletter* of July 19. The new division was formerly the professional training and health education section of the division of health and sanitation. Dr. Charles E. Shepard, formerly chief of the latter, has been made director of the professional training division, and Mr. Philip A. Hooker, formerly of the food supply division, has been appointed associate director. Health education activities will remain in the division of health and sanitation and will be administered by the medical section. The Institute of Inter-American Affairs has been assisting in the training of Latin American professional and technical personnel through the granting of fellowships for training in the United States and by the Inter-American Cooperative Health Services in the various American republics through a number of local training projects. On Oct. 8, 1942 the program started, when the board of directors of the Institute of Inter-American Affairs provided the initial funds. The grants given by the institute are noncompetitive and the power of recommendation rests with the chief of part and the minister of health or appropriate national authority in the country of the applicant. Grants for graduate study are divided roughly into two classes: fellowships for study with recognized institutions or scholars, generally for one year, and travel grants for observation of various phases of public health, these being of various lengths depending on the type of study desired. Under the training provided by the Inter-American Cooperative Health Services in other American republics, hundreds of persons have received instruction in sanitation, medical or nursing services and in methods of teaching the public and winning understanding and cooperation.

Pan American League Against Rheumatism.—Dr. Aníbal Ruiz Moreno, Buenos Aires, Argentina, is the temporary chairman of the newly formed Pan American League Against Rheumatism, which consists of Argentina, Brazil, Canada, Chile, the United States, Mexico, Paraguay, Peru and Uruguay. Officers of the central committee appointed by the different countries are Dr. Ralph Pemberton, Philadelphia, president; Dr. Moreno, vice president; Dr. Loring T. Swaim, Boston, secretary, and Dr. Fernando Herrera Ramos, Uruguay. Representatives of the American Rheumatism Association to the central committee are Lieut. Col. Philip S. Hench, M. C., and Dr. Richard H. Freyberg, New York. Representatives to the regional committee are Col. Walter Bauer, M. C., and Dr. Donald F. Hill, Tucson, Ariz.

New Corresponding Members of Internal Medicine.—The Society of Internal Medicine of the Asociación Médica Argentina, Buenos Aires, has appointed as foreign corresponding members the following physicians:

Dr. David P. Barr, New York.
Dr. Edward L. Bortz, Philadelphia.
Dr. Morris Fishbein, Chicago.
Dr. Reginald Fitz, Boston.
Dr. Louis Hamman, Baltimore.
Dr. Ernest E. Irons, Chicago.
Dr. Roger I. Lee, Boston.
Dr. William S. Middleton, Madison, Wis.
Dr. John H. Musser, New Orleans.
Dr. James E. Paullin, Atlanta, Ga.
Dr. O. A. Perry Pepper, Philadelphia.
Dr. William D. Stroud, Philadelphia.
Dr. Paul D. White, Bosotn.

Each of the physicians has been presented with a certificate signed by the president of the society, Dr. Egidio S. Mazzei. Dr. Mazzei has invited the new members to forward short scientific papers to be read at a meeting to be held in October in Buenos Aires, at which the general discussion will concern "Anti-Infectious Chemotherapy in Internal Medicine."

Personal.—A new factor in the technic of grafting the nerve of a cadaver to a human being is now under development by Dr. Nilson de Rezende, Rio de Janeiro, Brazil. Any peripheral nerve from a fresh cadaver, no more than twenty-four hours dead, can be removed and prepared with antiseptic solutions, washed in vitamin B complex and grafted with special technic, Dr. Rezende is reported to have said in describing his own method of utilizing a glue suture with acacia powder and pectin, according to an announcement from the Pan American World Airways.——Dr. Antonio González Ochoa, chief of the laboratory of mycology at the Institute of Public Health and Tropical Diseases, Mexico City, has gone to the United States as the guest of the U. S. Department of State.

Production of New Yeast.—The Colonial Food Yeast Limited, a corporation created by the British government to finance and manage the plant, has entrusted the West Indies Sugar Company with the construction and operation of a factory; an interest free loan of $600,000, drawn from the Colonial and Development and Welfare Fund, will serve as capital. A. C. Thaysen of the British Department of Scientific and Industrial Research is the inventor of the yeast, which is said to contain from 40 to 50 per cent protein and all B vitamins. The anticipated cost is 12 cents per pound, and it is expected that one-half ounce will be sufficient to meet the average person's daily requirements of proteins and B vitamins. Cane sugar is the source of the yeast, and its discovery represents the result of research conducted by the British government to stimulate the sugar industry in the West Indies. One acre of agricultural land will produce only 70 pounds of protein annually, but sown in sugar cane the same area would become twelve times as productive, yielding 840 pounds of protein a year, it was stated.

Haiti Health Program Extended.—Inter-American health and sanitation work in Haiti is to be extended for another three years as the result of an agreement just concluded by the Haitian government with the Institute of Inter-American Affairs. Inter-American health work has been under way in Haiti for more than two years and has involved malarial control and installation of sanitation facilities, largely to support war activities of the island republic. Under the new agreement the work is to be continued and will be financed by a joint fund. Haiti has agreed to contribute $150,000 to the joint fund, and the institute has agreed to contribute $300,000. Haiti is the twelfth of the other American republics to extend inter-American health work. Under the program, eighteen of the other American republics are making a united effort to elevate health standards in the hemisphere with financial and technical aid from the United States. Dr. George C. Dunham, vice president of the Institute of Inter-American Affairs, signed the new agreement on behalf of the institute.

Foreign Letters

LONDON

(From Our Regular Correspondent)

July 15, 1944.

Enlargement of the Council of the Royal College of Surgeons

The governing body of the Royal College of Surgeons, its council, is elected by the college fellows, a majority of whom are general surgeons. The result is that the council consists of general surgeons with only rare exceptions. The great development of specialism in modern times has rendered the practical exclusion of specialists from the council an anomaly which the present council proposes to remove. The council has sent a letter to the bodies representing ophthalmology, otolaryngology, radiology, anesthetics and general practice stating that it is felt to be increasingly important to ensure representation on the council of branches of practice which at any time may not have representation by the ordinary process of election. The council therefore will apply for such alterations in the charters as will enable it to appoint additional members for this purpose. It is intended that such appointed members may be fellows or members of the college of the same seniority as that required for those seeking election to the council, that such members shall be appointed annually after consultation with the bodies representing the different branches of practice, that the same individual shall not be eligible for reappointment beyond five years and that such appointed members shall not have the right of voting for election of the president or vice president. These proposals require alterations in the charters of the college, application for which will not be accepted till after the war. But the council considers that it should have at an early date the assistance in its deliberations of those branches not represented by any of the elected members. The present members have decided forthwith to invite representatives of these groups to attend the council meetings. The council members do not have the power to grant voting rights to those invited, but the guests will have every opportunity to express their views. The council has invited the following bodies to suggest names: the councils of British ophthalmologists, the Association of Anesthetists, the British Association of Otolaryngologists, the Faculty of Radiologists and (for general practice) the British Medical Association.

The Relief of Liberated Europe

At a conference organized by the Socialist Medical Association and the Fabian International Bureau to discuss medical relief and food supplies for needy countries after the war, some appalling facts were given of the effects of the German occupation of the countries of Europe. Dr. B. H. Sajet of the Netherlands gave recent statistics on the increase of disease there, which he said afforded some index of the conditions in other occupied countries. The incidence of diphtheria had risen from 1,273 cases in 1939 to 53,000 in 1943, he said, and over the same period the incidence of bacillary dysentery rose from 700 to 5,300 cases, and of poliomyelitis from 400 to 1,947 cases. The mortality from phthisis almost doubled between 1939 and 1942. Dr. A. Kleinzeller of Czechoslovakia reported that in one region of his country, with a population of 2 to 3 million, the incidence of typhus, which used to be 3 or 4 cases a year, was now more than 400 cases in three months. In some districts more than half the population have dysentery and more than half the infants die in their first year.

Dealing with the danger of epidemics in the liberated countries, Dr. Philip D'Arcy said that we should now be preparing teams of experts in epidemiology, not only doctors but also nurses and technical and social workers. Dr. Marc Daniels spoke of the great increase in Europe in the incidence and mortality of tuberculosis. We must begin by improving nutrition and the standard of living, he said.

Prof. J. R. Marrack dealt with food supplies. The minimal requirement of a man was estimated at 2,000 calories daily. In Greece the average is about 1,000, in Belgium 1,400, in Europe as a whole about 1,400. Of the 400 million people in Europe, about 250 million will need help, he estimated. By 1941 milk production had fallen by a third in Denmark and meat by more than a third. If Europe is to be fed, well fed countries like Britain and the United States must eat less, it was concluded.

Sir Cuthbert Wallace: A Great War Surgeon

Sir Cuthbert Wallace, a former president of the Royal College of Surgeons, died recently in his seventy-seventh year. Among much important work, administrative as well as surgical, his services to war surgery were noteworthy. His experience in this branch was considerable, beginning with the South African war in 1899. During the first world war he was consulting surgeon to the first army of the British Expeditionary Force. His greatest achievement was the part he played in placing abdominal surgery in the classification of field surgery in war. This is well described in the *British Medical Journal* by another distinguished war surgeon, Surgeon Rear Admiral Gordon-Taylor. At the beginning of the first world war administrative authority was strongly opposed to operative intervention in gunshot wounds of the abdomen, basing this view on experience in the South African war. The evidence soon convinced Wallace that operative surgery in the forward area must be invoked if those suffering from frightful lacerations of the intestine and bleeding wounds of the mesentery were to be saved. He surreptitiously carried instruments in his pockets to forward surgical formations to implement those whose surgical activities in the abdomen was handicapped by lack of facilities. As a result of his connivance abdominal surgery in the field was born, and in the early months of 1915 the late John Campbell successfully operated on the first gunshot wound of the stomach, Owen Richards performed the first successful small intestine resection and Claude Frankau the first resection of the colon for gunshot injury.

Treatment of Carcinoma of the Prostate

A discussion took place at the Section of Urology of the Royal Society on the treatment of carcinoma of the prostate. Mr. Clifford Morson said that operations were aimed at eradicating the growth or relieving the obstruction. In attempts at radical surgery the ureters must be transplanted and the bladder and prostate removed, he stated. Having found that patients did not survive this formidable operation longer than five years, he said, he had abandoned it. But the results of inserting radium needles proved no better. He condemned castration, but later speakers did not agree with this. Mr. Kenneth Walker believed that it relieved symptoms in some patients but that endocrine treatment was better. There was general agreement as to the value of diethylstilbestrol. Mr. E. W. Riches was impressed with the dramatic results: He gave 1 mg. three times a day to begin with and worked up to 20 mg. three times a day. It was admitted, however, that the duration of the improvement still remained in doubt.

University College to Reopen

It has been decided to bring back to London, for the next university session, beginning in October, the university faculties of Arts, Science and Engineering, which have been evacuated for five years. The faculty of medicine which is attached to University College Hospital was not evacuated. Considerable damage was done to the college by German bombs. Almost the whole of the Faculty of Arts was destroyed. It will be housed in temporary quarters, which are now being prepared.

TEL-AVIV, PALESTINE

(From Our Special Correspondent)

July 6, 1944.

Smallpox

In January an infant of 4 weeks was brought to the Municipal Hospital in Tel-Aviv suffering from hernia of the umbilicus. It had a rash on the body, which developed quickly into smallpox. The entire section of the hospital was at once declared under quarantine. Three children in the same ward contracted the disease. Two of them died, and the third suffered an acute form of smallpox. By means of strict quarantine, and thanks to the fact that in this country children are vaccinated against smallpox at an early age, the epidemic was localized and no further cases occurred. The origin of the first case was investigated, and it was found that the father of the infant was employed outside Tel-Aviv in a locality where there were some cases of smallpox; evidently he had transferred the disease to the infant without contracting it himself.

Recently a slight epidemic of smallpox broke out in Haifa, where 20 cases have occurred. The medical authorities are in control of the situation.

On April 1 several cases of smallpox were discovered in the southern parts of the country, and by the end of the month these had reached the proportions of a light epidemic. There were 40 cases, all among the Arab fellahin and Bedouins. Strangely enough, the number of children who contracted the disease was small; most of the patients were adults, including some elderly men. This is explained by the fact that the adults had not been vaccinated in childhood, or if they had been vaccinated the immunity had expired. There have been only 4 fatal cases. The department of health of the government of Palestine and the health institutions of the Jewish community have taken steps to localize the epidemic and to vaccinate large numbers of the population.

Leishmaniasis of the Skin

The main home of leishmaniasis in Palestine is considered the ancient city of Jericho and its surroundings north of the Dead Sea. In the Jewish settlement south of the Dead Sea this disease is unknown. In 1926 Dr. Dostrowsky discovered a few nests in some quarters of Jerusalem. Dr. Sternfeld has now published a summary of 189 cases which he encountered in the North of Palestine in 1938-1943. Published in *Harefuah*, the journal of the Palestine Jewish Medical Association, his conclusions are as follows:

1. Leishmaniasis, an endemic disease in Palestine, is continually spreading. Haifa and the northern part of Palestine, which were heretofore considered free from Leishmaniasis, have also become nests of this disease during recent years.

2. The spreading of the disease from its original foci in the neighborhood of the Dead Sea and Jericho is apparently connected with the industrial development of this district. Immigration from affected regions like Aleppo, and the habit of the Arabs of leaving it untreated, are additional contributory factors to the spread of the disease.

3. New centers of leishmaniasis are bound to appear in the North if the sporadic cases are not discovered early and radically treated.

Activities of Kupat Holim in Infant Welfare Stations and Schools

In 1943, 31 infant welfare stations were maintained by Kupat Holim, the sick fund of the general federation of Jewish labor in Palestine. In addition, ninety agricultural settlements were visited by a children's doctor, and fifty schools were under medical supervision.

Kupat Holim, through its infant welfare stations, serves a third of the Jewish infants of the country. Of the 10,000 infants born to Jewish parents, Kupat Holim takes care of 30 per cent, Hadassah 40 per cent and the municipality of Tel-Aviv 28 per cent. Infant mortality of the infants treated in the infant welfare stations declined from 3 per cent in 1936 to 1 per cent in 1942.

Nearly 7,500 children in fifty schools are under the supervision of Kupat Holim. The first aim of medical supervision over schools is prevention of the spread of infectious diseases. During 1941, convalescent camps were arranged for 572 children, 547 children received dental treatment, 328 children received orthopedic treatment and 131 children were fitted with glasses. Trachoma has become almost nonexistent. Pediculosis has dropped from 13-19 per cent to 3 per cent.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

BOARDS OF MEDICAL EXAMINERS
BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of boards of medical examiners and boards of examiners in the basic sciences were published in THE JOURNAL, Aug. 12, page 1059.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: Parts I and II. Various centers, Nov. 13-15. Part III. Various centers, September or October. Exec. Sec., Mr. E. S. Elwood, 225 S. 15th St., Philadelphia.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY: *Written.* Part I. Various centers, Jan. 19. Final date for filing application is Oct. 21. Sec., Dr. P. M. Wood, 745 Fifth Ave., New York 22.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written. Part I.* Various centers, February. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh 6.

AMERICAN BOARD OF OPHTHALMOLOGY: Chicago, Oct. 5-7. Los Angeles, January. Final date for filing application is Oct. 1. New York, June. Chicago, October. Final date for filing application is Dec. 1. Sec. Dr. S. Judd Beach, 56 Ivie Road, Cape Cottage, Maine.

AMERICAN BOARD OF OTOLARYNGOLOGY: *Oral.* Chicago, Oct. 4-7. Sec., Dr. Dean M. Lierle, University Hospitals, Iowa City, Ia.

AMERICAN BOARD OF PEDIATRICS: *Oral.* New York, April 14-15. Final date for filing application is Dec. 15. Chicago, May 19-20. Final date for filing application is Jan. 19. Sec., Dr. C. A. Aldrich, 115½ First Ave., S.W., Rochester, Minn.

AMERICAN BOARD OF PSYCHIATRY & NEUROLOGY: *Oral.* New York, December. Final date for filing application is Sept. 30. Sec., Dr. Walter Freeman, 1028 Connecticut Ave., N.W., Washington 6, D. C.

Society Proceedings

COMING MEETINGS

Aero Medical Association of the United States, St. Louis, Sept. 4-6. Dr. David S. Brachman, 5440 Cass Ave., Detroit 2, Secretary.

American Academy of Ophthalmology and Otolaryngology, Chicago, Oct. 8-12. Dr. W. L. Benedict, 102 Second Ave. S.W., Rocnester, Minn., Secretary.

American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Hot Springs, Va., Sept. 7-9. Dr. James R. Bloss, 418 Eleventh St., Huntington, W. Va., Secretary.

American Congress of Physical Therapy, Cleveland, Sept. 6-9. Dr. Richard Kovacs, 2 East 88th St., New York 28, Secretary.

American Hospital Association, Cleveland, Oct. 2-6. Mr. George P. Bugbee, 18 East Division St., Chicago, Executive Secretary.

American Pediatric Society, Atlantic City, N. J., Sept. 25-27. Dr. Hugh McCulloch, 325 N. Euclid Ave., St. Louis 8, Secretary.

American Public Health Association, New York, Oct. 3-5. Dr. Reginald M. Atwater, 1790 Broadway, New York 19, Executive Secretary.

American Roentgen Ray Society, Chicago, Sept. 24-29. Dr. H. Dabney Kerr, University Hospitals, Iowa City, Secretary.

Colorado State Medical Society, Denver, Sept. 27-29. Dr. John S. Bouslog, 537 Republic Bldg., Denver 2, Secretary.

Delaware, Medical Society of, Lewes, Sept. 11-12. Dr. W. O. La Motte, 601 Delaware Avenue, Wilmington, Secretary.

District of Columbia, Medical Society of the, Washington, Oct. 5-7. Mr. Theodore Wiprud, 1718 M St. N.W., Washington, Secretary.

Indiana State Medical Association, Indianapolis, Oct. 3-5. Mr. T. A. Hendricks, 23 East Ohio St., Indianapolis 4, Executive Secretary.

International College of Surgeons, U. S. Chapter, Philadelphia, Oct. 3-5. Dr. Desiderio Roman, 259 South 17th St., Philadelphia, Secretary.

Kentucky State Medical Association, Lexington, September 18-20. Dr. P. E. Blackerby, 620 S. Third St., Louisville, Secretary.

Michigan State Medical Society, Grand Rapids, Sept. 27-29. Dr. L. Fernald Foster, 2020 Olds Tower, Lansing 8, Secretary.

Mississippi Valley Medical Society, Peoria, Ill., Sept. 27-28. Dr. Harold Swanberg, 510 Maine St., Quincy, Ill., Secretary.

Northern Minnesota Medical Association, Hibbing, Aug. 26. Dr. R. N. Jones, 8 Sixth Ave. N., St. Cloud, Secretary.

Oregon State Medical Society, Portland, Sept. 2-3. Dr. Thomas D. Robertson, St. Vincent's Hospital, Portland, Secretary.

Pennsylvania, Medical Society of the State of, Pittsburgh, Sept. 19-21. Dr. Walter F. Donaldson, 500 Penn Ave., Pittsburgh 22, Secretary.

Radiological Society of North America, Chicago, Sept. 24-29. Dr. Donald S. Childs, 607 Medical Arts Bldg., Syracuse, N. Y., Secretary.

Utah State Medical Association, Salt Lake City, August 24-26. Dr. D. G Edmunds, 610 McIntyre Bldg., Salt Lake City, Secretary.

Wisconsin, State Medical Society of, Milwaukee, Sept. 18-20. Mr. Charles H. Crownhart, 110 E. Main St., Madison 3, Secretary.

Deaths

Andrew Porter Biddle ✠ Detroit; Detroit College of Medicine, 1886; an Affiliate Fellow of the American Medical Association; since 1917 emeritus professor of dermatology and syphilology at his alma mater, now known as the Wayne University College of Medicine; formerly professor of dermatology at the Detroit Post-Graduate School of Medicine; in addition to serving as secretary and counselor to the Michigan State Medical Society, he had been president for two successive terms from 1916 to 1918; formerly secretary of the Wayne County Medical Society; a member and past president of the Detroit Academy of Medicine; first president of the Detroit Dermatological Society in 1922; member of the Chicago Dermatological Society; member of the American Dermatological Association, serving as president in 1925-1926; fellow of the American College of Physicians; specialist certified by the American Board of Dermatology and Syphilology; for six years a member of the state board of health; a member of the board of education of Detroit from 1917 to 1925, when he became president; a member of the Detroit Library Commission for many years and president in 1931; served for a long period in the Michigan National Guard and had been commissioned major and surgeon of the 31st regiment during the Spanish-American War; in 1892 appointed U. S. Pension Examining Surgeon; consultant on the staffs of Receiving Hospital, St. Mary's, Woman's Hospital, Children's Hospital, St. Joseph's Mercy Hospital, the Protestant Children's Home of Detroit and the Detroit Board of Health; in recognition of his loyal and continuous service, the state medical society created the annual Andrew P. Biddle Oration; in 1929 received the honorary degree of doctor of science from the College of the City of Detroit and in 1935 the honorary degree of master of arts from the University of Michigan, Ann Arbor, "in recognition of a life devoted to the advancement of education and ethics in the medical profession"; member of the Naval and Military Order of the Spanish-American War and a Companion of the Military Order of Foreign Wars; first editor of the *Journal of the Michigan State Medical Society*, serving from 1902 to 1906; died August 2, aged 82.

Rudolph Jerome Price, Dayton, Ohio; University of Michigan Medical School, Ann Arbor, 1923; member of the Ohio State Medical Association, American Roentgen Ray Society, Radiological Society of North America, Inc., and the American College of Radiology; specialist certified by the American Board of Radiology; intern at the Miami Valley Hospital, 1923-1924; awarded the French Croix de Guerre for services during World War I; recently appointed by the army as a consultant at Wright Field; radiologist at the Good Samaritan Hospital; secretary of the Dayton Hospital board; died June 8, aged 48, of injuries received in an automobile accident.

Winfred Wilson ✠ Memphis, Texas; Johns Hopkins University School of Medicine, Baltimore, 1904; member and past president of the Panhandle District Medical Society; at one time professor of pathology at the Baylor University College of Medicine, Dallas; for many years health officer of the city of Memphis and of Hall County; operated the Memphis Hospital; since 1917 local surgeon for the Fort Worth and Denver Railroad; during World War I, chairman and physician for the Selective Service Board number I in Hall County, and chairman of the Hall chapter of the American Red Cross; died in the Union Memorial Hospital, Baltimore, May 1, aged 64, of coronary occlusion and peritonitis following intestinal obstruction.

Charles William Farr ✠ Major, U. S. Army, retired, Buffalo; University of Vermont College of Medicine, Burlington, 1897; veteran of the Spanish-American War; entered the U. S. Army as an assistant surgeon in 1901; became a captain in 1906; retired as a major in 1910 because of disability in line of duty; returned to active duty intermittently until Aug. 15, 1932, when he was again retired; formerly professor of military science and tactics at the University of Buffalo School of Medicine; at one time physician at the Sing Sing Prison; died in the Edward J. Meyer Memorial Hospital July 11, aged 68, of cerebral thrombosis.

Frank Henry Hacking, Minneapolis; Rush Medical College, Chicago, 1899; member of the Minnesota State Medical Association; one of the founders of the Minnesota Association for Crippled Children; a director of the Hennepin County Tuberculosis Association; attending specialist in charge of the tuberculosis department of the U. S. Veterans Bureau from 1919 to 1926; served as physician in charge of the Hopewell and Thomas tuberculosis hospitals, on the staff of the Glen Lake Sanatorium, Oak Terrace, and the Fairview Hospital, where he died June 2, aged 72, of coronary occlusion and cerebral thrombosis.

Charles Edward Caine ✠ Morris, Minn.; University of Minnesota College of Medicine and Surgery, 1896; served for many years as a member of the state board of medical examiners, of which he had been past president; since January 1942 mayor of Morris; for six years member of the city commission; served as city and county physician, as county coroner for many years and as member and president of the local board of education; medical director and owner of the Morris Hospital; surgeon in Morris for the Great Northern and Northern Pacific railways; died April 15, aged 75, of coronary occlusion.

Burton Whitford Christie ✠ Omaha; Omaha Medical College, 1902; past president of the Omaha-Douglas County Medical Society; served as assistant professor of medicine and pediatrics at the University of Nebraska College of Medicine; for many years on the staff of the Immanuel Hospital; surgeon for the Burlington Railroad; died in a Portland, Ore., hospital May 27, aged 66, of heart disease following pulmonary edema.

William Harvey Cooke ✠ East Orange, N. J.; Boston University School of Medicine, 1888; a founder of the Homeopathic Hospital of Essex County, now known as the East Orange General Hospital, of which he had been a member of the board of directors and where he died June 6, aged 77, of cerebral hemorrhage.

William Seward Dart, Oneonta, N. Y.; Eclectic Medical College of the City of New York, 1890; member of the Medical Society of the State of New York; member of the associate staff of the Aurelia Osborn Fox Memorial Hospital, where he died June 13, aged 78, of uremia.

George Pitzer Dougherty, Farina, Ill.; Barnes Medical College, St. Louis, 1911; died June 5, aged 56, of coronary thrombosis.

Francis G. Earley ✠ Ridgway, Pa.; Jefferson Medical College of Philadelphia, 1885; on the staff of the Andrew Kaul Memorial Hospital, St. Marys; died May 7, aged 80, of carcinoma of the left lung.

Edwin M. Stanton Edwards ✠ Trinway, Ohio; Baltimore Medical College, 1898; died in the City Hospital, Coshocton, June 11, aged 71, of pneumonia.

Herman Frederick Fraser, Detroit; Detroit College of Medicine and Surgery, 1927; member of the Michigan State Medical Society; interned at the Henry Ford Hospital; member of the staff of Northwestern Branch of Grace Hospital; died in the Woman's Hospital June 5, aged 56, of coronary occlusion.

Cornelius J. Geenen ✠ Grand Rapids, Mich.; State University of Iowa College of Medicine, Iowa City, 1926; senior surgeon, Butterworth Hospital, where he died June 7, aged 47, of agranulocytosis.

Abraham Chester Green, Chicago; Northwestern University Medical School, Chicago, 1910; member of the city health department; died in the Wesley Memorial Hospital June 7, aged 57, of bronchopneumonia, chronic myocarditis and chronic glomerular nephritis.

Franklin Jacob Hahn ✠ Bath, Pa.; Jefferson Medical College of Philadelphia, 1895; served for many terms on the school board; director and vice president of the First National Bank; died June 4, aged 73, of heart disease.

Jabez Masten Harman, Floyd, Va.; University of Louisville (Ky.) Medical Department, 1891; member of the Medical Society of Virginia; coroner and chairman of the Floyd County Board of Health; died June 3, aged 77, of injuries received in an automobile accident.

Elizabeth Mercelis, Montclair, N. J.; Woman's Medical College of the New York Infirmary for Women and Children, New York, 1892; served on the staffs of the Mountainside and St. Vincent's hospitals; formerly member of the board of health and school physician; died June 1, aged 75, of coronary occlusion.

James Leland Merrell, Hoxie, Ark.; Kansas City (Mo.) College of Medicine and Surgery, 1924; also a pharmacist and lawyer; member of the Arkansas Medical Society; president of the Lawrence County Medical Society; served in the medical corps of the U. S. Army during World War I; member of the board of education; on the staff of the Missouri Pacific Hospital, Little Rock; surgeon of the Missouri Pacific Rail-

road Company; died in Little Rock June 12, aged 55, of carcinoma of the lung.

Hugo Neukamp, Hosmer, S. D.; Rheinische Friedrich-Wilhelms-Universität Medizinische Fakultät, Bonn, Prussia, Germany, 1898; member of the South Dakota State Medical Association; killed in an automobile accident June 1, aged 68.

Edwin Plassnig, Baltimore; University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, 1925; member of the Medical and Chirurgical Faculty of Maryland; served during World War I; physician for the Baltimore Transit Company; on the staffs of the Mercy Hospital and the South Baltimore General Hospital, where he died June 6, aged 47, of chronic glomerulonephritis.

Harry Allen Richter ✠ Kenilworth, Ill.; Northwestern University Medical School, Chicago, 1923; member of the American Heart Association and the American Therapeutic Society; fellow of the American College of Physicians; intern at the Kings County Hospital in Brooklyn, 1923-1924; member of the staff of the Swedish Covenant Hospital, Chicago, and cardiologist at St. Francis Hospital, Evanston, where he died July 8, aged 47, of carcinoma of the bladder and rectum.

Daniel Rutgers Robert ✠ New Lebanon Center, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1911; served during World War I; served as health officer of Canaan and New Lebanon Center; attending physician at the Berkshire Industrial Farm, Canaan, where he died June 21, aged 59, of coronary thrombosis.

CAPT. WILLIAM I. HUNT
M. C., A. U. S., 1913-1944

Robert Rosenberg, Brooklyn; Fordham University School of Medicine, New York, 1917; died in the Flower and Fifth Avenue Hospitals June 13, aged 55, of tumor of the brain.

Harry Preston Sayle, Tillatoba, Miss.; University of Louisville (Ky.) Medical Department, 1912; died May 10, aged 57, of acute dilatation of the heart.

Peter Arthur Scheurer ✠ Manchester, Mich.; Detroit College of Medicine, 1908; member of the school board and the village council; president of the People's Bank; for many years a member of the staff of the Mercy Hospital, Jackson, where he died June 9, aged 59, of myocardial failure.

Elisha Lewis Sencindiver, Martinsburg, W. Va.; University of Maryland School of Medicine, Baltimore, 1891; one of the founders of the King's Daughters' Hospital; died June 19, aged 77, of coronary thrombosis.

William Ward Seward, Surry, Va.; Medical College of Virginia, Richmond, 1897; member of the Medical Society of Virginia; past president of the Post-Graduate Medical Society of Southside Virginia; chairman of the medical advisory board for Surry and Sussex counties during World War I; died May 5, aged 70, of pyelonephritis.

Marshall J. Shaw, Plainview, Texas; University of Tennessee Medical Department, Nashville, 1892; died April 30, aged 91, of cerebral hemorrhage.

Charles Almon Sheely, Gulfport, Miss.; Medical Department of Tulane University of Louisiana, New Orleans, 1898; member of the Mississippi State Medical Association; formerly associated with the U. S. Public Health Service; served as district surgeon for the Louisville and Nashville and the Illinois Central railroads; died in the King's Daughters' Hospital May 19, aged 75, of cerebral hemorrhage.

Dustin Samuel Shiepe, Springfield, Mass.; Tufts College Medical School, Boston, 1943; intern at the Mercy hospital, where he died May 26, aged 26, of coronary thrombosis.

James Young Simpson ✠ Evanston, Ill.; College of Physicians and Surgeons, New York, 1882; an Affiliate Fellow of the American Medical Association; member of the Missouri State Medical Association; died May 2, aged 83, of cerebral thrombosis.

John Siveke ✠ Passaic, N. J.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1913; chief medical inspector for the public schools in Passaic; on the staff of the Passaic General Hospital; died May 9, aged 59, of cerebral hemorrhage, hypertension and arteriosclerosis.

Alexander Soble, Elmira, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1922; member of the Medical Society of the State of New York; on the staff of St. Joseph's Hospital; died June 11, aged 46, of accidental barbital poisoning.

Edward Isaac Stanley ✠ Albany, Ohio; Starling Medical College, Columbus, 1898; died May 9, aged 69, of coronary thrombosis.

Ichabod Thomas Sutton, Prattsville, N. Y.; Albany (N. Y.) Medical College, 1890; member of the Medical Society of the State of New York; served as county coroner and as health officer of Prattsville and Ashland; died May 12, aged 81, of diabetes mellitus and general arteriosclerosis.

Otto William Thie ✠ St. Louis; St. Louis University School of Medicine, 1912; visiting physician on the staff of the Missouri Pacific Hospital; died May 31, aged 69, of heart disease.

CAPT. GEORGE E. MORTIS
M. C., A. U. S., 1905-1944

Oscar Theodore Thomas, Cleveland; University of Pennsylvania Department of Medicine, Philadelphia, 1892; formerly assistant clinical professor of gynecology at the Western Reserve University School of Medicine; a member of the staff of the Woman's Hospital and formerly on the staffs of the Charity Hospital and the City Hospital, where he died June 3, aged 74.

David Chester Thompson ✠ Assistant Surgeon, Lieutenant, U. S. Navy, retired, Jacksonville, Fla.; Manitoba Medical College, Winnipeg, Man., Canada, 1905; retired from the Navy Dec. 16, 1921; medical officer for the U. S. Sugar Corporation, Azucar; died in Pahokee June 5, aged 63, of diabetes mellitus.

Francis Meredith Vessells, Perryville, Mo.; Missouri Medical College, St. Louis, 1899; served as a major in the medical corps of the U. S. Army during World War I; died May 23, aged 69, of cardiorenal disease.

KILLED IN ACTION

William Ireys Hunt, Greenville, Miss.; Tulane University of Louisiana School of Medicine, New Orleans, 1942; served an internship at the Charity Hospital, New Orleans; began active duty in the medical corps, Army of the United States, as a first lieutenant on June 30, 1943; later promoted to captain; cited for heroism in crawling under fire to relieve the sufferings of wounded Americans and Japanese; killed in action on Bougainville June 5, aged 30.

George Emmanuel Mortis, Peabody, Mass.; Middlesex College of Medicine and Surgery, Waltham, 1932; served as city physician; commissioned a first lieutenant in the medical corps, Army of the United States, on July 11, 1942; later promoted to captain; awarded the Purple Heart; died on the isle of Capri January 1, of wounds received in action, aged 38.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1934 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Heart Journal, St. Louis

27:611-754 (May) 1944

Effect of External Heat and Cold on Patients with Angina Pectoris: Evidence for Existence of Reflex Factor. A. S. Freedberg, E. D. Spiegl and J. E. F. Riseman.—p. 611.
Occupational Potentialities of Cardiac Patients. Beatrice Kresky and L. J. Goldwater.—p. 623.
Problem of Rheumatic Fever in Navy. A. M. Master.—p. 634.
*Effect of Intravenously Administered Digoxin and Ouabain on Systemic Venous Pressure of Patients with Congestive Heart Failure. L. W. Eichna and H. Taube.—p. 641.
Further Observations on Ischemia Injury Pattern Produced in Dog by Temporary Occlusion of Coronary Artery: Incomplete T Diversion Patterns, Theophylline T Reversion and Theophylline Conversion of Negative T Pattern. R. H. Bayley, J. S. La Due and Dorothy Joseph York.—p. 657.
Persistent Displacement of RS-T Segment in Case of Metastatic Tumor of Heart. F. F. Rosenbaum, F. D. Johnston and V. V. Alzamora.—p. 667.
Heart Block: Influence of Ventricular Systole on Auricular Rhythm in Complete and Incomplete Heart Block. A. E. Parsonnet and R. Miller.—p. 676.
Congenital Cardiac Disease Bibliography of 1,000 Cases Analyzed in Maude Abbott's Atlas, with an Index. D. deF. Bauer and E. C. Astbury.—p. 688.

Intravenous Digoxin and Ouabain in Congestive Heart Failure.—While studying the circulatory effects of purified cardiac glycosides a rapid fall of the elevated venous pressure was encountered when these drugs were administered intravenously to patients with congestive heart failure. The subjects of the study by Eichna and Taube were hospitalized patients with organic heart disease of widely varying kinds. All had congestive heart failure. Venous pressure was measured in the antecubital veins by the direct method, using a manometer filled with isotonic solution of sodium chloride. The ventricular rate was counted, always for one full minute, by auscultation over the precordium. Arterial blood pressure was measured by the usual auscultatory method, employing a mercury manometer. Electrocardiograms were obtained by the standard limb leads. To ascertain the rate of the flow of urine, a catheter was placed in the urinary bladder and allowed to drain continuously. At ten minute intervals the amount of urine collected was measured, removed and recorded. These measurements were made frequently and often simultaneously, throughout an adequate control period and for two to four hours after injection of the glycoside. Thereafter, they were made daily or less frequently. The authors found the administration of single therapeutic doses of "Digoxin" and ouabain induced rapid improvement in the circulatory dynamics of patients with congestive heart failure. A rapid fall of the elevated venous pressure was the most striking and constant effect. It had the following characteristics: Onset of effect: ouabain three to eleven minutes, digoxin five to twenty-two minutes. Major effect: ouabain thirty-five to fifty-six minutes, digoxin forty-five minutes to three hours. It was associated with, but not dependent on, slowing of the ventricular rate when the cardiac mechanism was auricular fibrillation. It was unaccompanied by a change in ventricular rate when the cardiac mechanism was normal. It preceded the onset of diuresis, which at times was rapidly initiated. Its pattern did not depend on the initial level of venous pressure or the degree of congestive heart failure. It bore no relationship to changes in the electrocardiogram. Its duration was relatively short except in those patients whose cardiac reserve was sufficient to maintain circulatory compensation once it was reestablished. Compared molecule for molecule, ouabain induced effects more rapidly than digoxin. Large doses of these two glycosides at times induced toxic complications. The intermediate doses were free of these effects and therapeutically just as effective.

Anesthesiology, New York

5:225-328 (May) 1944

*Production of Negative Pressure in Respiratory Tract by Ciliary Action and Its Relation to Postoperative Atelectasis. A. C. Hilding.—p. 225.
Survival of Preserved Red Cells After Transfusion. O. F. Denstedt, Dorothy E. Osborne, H. Stansfield and I. Rochlin.—p. 237.
Rh Factor. C. C. Collins and M. J. Nicholson.—p. 254.
Diffusion Respiration in Dog Anesthetized by Pentothal Sodium. W. B. Draper and R. W. Whitehead.—p. 262.
Analysis of Inhalation Anesthesia by Graphic Means. P. Saunders.—p. 274.
Studies on Paraldehyde: II. Median Lethal Dose, LD_{50}, of Paraldehyde for Both Young and Old Rats on Two Dietary Regimens. G. W. Phillips, E. B. Carmichael and F. A. Kay.—p. 287.
Anesthesia: X. Irritative Action of Volatile Anesthetics on Mucous Membranes and Relationship Between Potency and Chemical Constitution. J. C. Krantz Jr., C. J. Carr and W. E. Evans Jr.—p. 291.

Ciliary Action in Respiratory Tract and Postoperative Atelectasis.—Hilding describes experiments which demonstrated that ciliary power acting on masses of occluding mucus can produce negative pressure in both the upper and lower parts of the respiratory tract. Steps in the production of postoperative pulmonary atelectasis seem to be about as follows: (1) production of an excessive amount of secretion; (2) formation of occluding masses in the air passages partly because of reduced respiration through splinting of diaphragm and pain and because the patient lies quietly in one position; (3) movement of a succession of these masses upward in the tract by ciliary action; (4) removal of a quantity of air by each of these masses; (5) progressive shrinkage of the affected lobes as air is removed; (6) compensatory distention of neighboring lobes; (7) production of considerable negative pressure within an affected lobe when the contained air has been exhausted; (8) immobilization of the mucus in the bronchus by atmospheric pressure.

Surgery, St. Louis

15:681-868 (May) 1944

*Hyperinsulinism: Report of Surgical Treatment of 3 Patients. H. G. Bell, L. Goldman, L. S. Craig and H. McCorkle.—p. 681.
Implantation of Pancreatic Duct into Gastrointestinal Tract: Experimental and Clinical Study. E. J. Poth.—p. 693.
Surgical Management of Duodenal Diverticula. H. E. Pearse.—p. 705.
Treatment of Large Bowel Obstruction: Transverse Colostomy—Incidence of Incontinence of Ileocecal Valve: Experience at University of Minnesota Hospitals. C. Dennis.—p. 713.
Cast and Precast Cartilage Grafts: Their Use in Restoration of Facial Contour. F. Young.—p. 735.
Surgical Treatment of Long Standing Deep Phlebitis of Leg: Preliminary Report. R. W. Buxton, J. M. Farris, C. A. Moyer and F. A. Coller.—p. 749.
*Swelling of Upper Extremity Following Radical Mastectomy. C. Holman, B. McSwain and J. M. Beal.—p. 757.
Significance of Nitrogen Loss in Exudate from Surface Burns. J. W. Hirshfeld, H. H. Williams, W. E. Abbott, C. G. Heller and M. A. Pilling.—p. 766.
Bullet Wounds of Lungs: Experimental Study. R. A. Daniel Jr.—p. 774.
Surgical Treatment of Chronic Pulmonary Abscess. G. E. Lindskog.—p. 783.
Surgical Treatment of Bronchiectasis: Factors Influencing Postoperative Morbidity and Mortality. H. C. Maier.—p. 789.
Surgical Treatment of Congenital Atresia of Esophagus. G. H. Humphreys.—p. 801.
Transfusion of Massive Volumes of Citrated Whole Blood and Plasma in Man: Clinical Evidence of Its Safety. J. G. Allen, D. E. Clark, T. F. Thornton and W. E. Adams.—p. 824.
Blood and Plasma Transfusion Service. P. I. Hoxworth.—p. 832.
Gelatin as Plasma Substitute: Preliminary Report of Clinical Experience. C. E. Koop, A. G. Fletcher Jr., C. Riegel and J. S. Lockwood.—p. 839.
Effect of Dicumarol on Susceptibility to Action of Heparin. J. Walker and J. E. Rhoads.—p. 859.

Surgical Treatment of Hyperinsulinism.—Bell and his associates report 3 cases in which operation was performed for hypoglycemia resulting from hyperinsulinism. Symptoms suggesting hypoglycemia were present in all 3 and the minimum fasting blood sugar determinations were considerably below 50 mg. per hundred cubic centimeters. Solitary tumors of pancreatic islet cells were excised from the region of the tail of the pancreas in 2 of the patients. In 1 of these the tumor was almost completely extrapancreatic. Its gross appearance was similar to that of an accessory spleen or hemolymph node

and although it was adjacent to the inferior aspect of the pancreas its attachment to this organ was apparent only on microscopic examination of the specimen. The third patient was known to have had diabetes mellitus for seven years. Episodes of hypoglycemia appeared and became progressively more frequent and severe over a period of a few weeks. At operation no evidence of tumor or aberrant pancreatic tissue could be found. A partial resection of the pancreas was performed. The condition of diabetes mellitus recurred following the operation, and subsequently the patient has remained diabetic. Pathologic examination of the part of the pancreas excised showed alterations in the staining of the tissue, suggesting the presence of islets of Langerhans that were increased in number and size. Hyperinsulinism may be caused by tumors containing actively secreting islet cells or by the hypersecretion of insulin in a pancreas in which the islets of Langerhans may appear to be either normal or increased in size and number. Aberrant pancreatic tissue also is a possible source. Rarely, hyperinsulinism has appeared in patients who previously had diabetes mellitus. The clinical manifestations of hyperinsulinism do not appear in all patients with tumors of the islet cells. Such tumors may be found at necropsy or during laparotomy for other abdominal conditions. It is supposed that insulin is elaborated by the beta cells of the islets of Langerhans and that tumors of the islet cells giving clinical manifestations of hyperinsulinism contain appreciable numbers of these cells. The dietary management of patients with hypoglycemia consists of low carbohydrate, high protein, high fat food given at frequent intervals (six meals a day).

Swelling of Arm Following Radical Mastectomy.—Having seen a patient who developed swelling of the arm two and one-half years after radical mastectomy, Holman and his associates tried to determine the cause of such swelling. They examined 100 patients who had been subjected to radical mastectomy between six months and eleven years previously. They were not consecutive cases but were selected because they were available for follow-up examination. The arms of these patients were measured, the presence or absence of swelling noted and data collected relating the swelling to grafting, infection, recurrence and roentgenotherapy. The authors found that primary skin grafting has no influence on the occurrence of swelling of the arm following radical mastectomy. Swelling of the arm cannot be assumed to signify recurrence of carcinoma. The presence or absence of metastases to the axillary nodes at the time of operation has no bearing on the swelling. In this series of cases by far the greatest factors in the cause of swelling of the arm were infection and x-ray dermatitis.

Virginia Medical Monthly, Richmond

71:225-278 (May) 1944

Correction of Multiple Deformities of Nose. W. L. Gatewood.—p. 227.
Acute Surgical Conditions Complicating Malignancy. J. L. Rawls. —p. 232.
Recent Advances in Pharmacology of Nicotine. H. B. Haag and P. S. Larson.—p. 235.
Toxicity of Trinitrotuolene. A. McCausland and R. F. Hawkins.—p. 252.
Reports and Observation on Some 300 Cases of Whooping Cough. W. B. McIlwaine and Leta J. White.—p. 249.
Study of Value of Pertussis Vaccine. L. F. Galvin and F. J. Wampler. —p. 251.
Outbreak of Food Poisoning Due to Staphylococcus Aureus. G. McL. Lawson and T. S. Englar.—p. 253.
Longevity of Fungi on Carriers. F. W. Shaw and F. J. von Gutfeld. —p. 256.
Army Specialized Training Unit at Medical College of Virginia. J. M. Dixon.—p. 258.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

52:197-244 (May) 1944

Ergonovine-like Oxytocic Synthetized from Lysergic Acid. A. C. Kirchhof, C. A. Racely, W. M. Wilson and N. A. David.—p. 197.
Surgical Treatment of Congenital Hypertrophic Pylorie Stenosis. J. A. Gius.—p. 209.
Clinical Use of Sulfonamides. S. Mayer Jr.—p. 213.
Spinal Anesthetic Agents and Methods Usually Employed at University of Oregon Medical School Hospitals. J. H. Hutton.—p. 218.
Diabetes Mellitus: Collective Review, 1941 to 1943. L. J. Palmer.—p. 222.
Recent Advances in Treatment of Arthritis. Dorothy Gill.—p. 230.
Vagaries and Historical Backgrounds in Obstetrics: Part II. G. C. Schauffler.—p. 234.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Lancet, London

1:523-554 (April 22) 1944

Analysis of Battle Casualties Admitted to Middle East Hospitals, April 1, 1942 to March 31, 1943. P. Wiles.—p. 523.
Base Hospital in 1918. H. J. Nightingale.—p. 525.
Amblyopia Due to A Vitamin Deficiency. P. B. Wilkinson.—p. 528.
*Kala Azar Treated with 4:4′ Diamidinostilbene. R. B. U. Somers. —p. 531.
*Malaria As Nonrelapsing Disease: Review of 1,619 Cases in Northern Rhodesia. L. M. Rodger.—p. 533.
Nitrous Oxide Economiser: Simple Attachment for Boyle's Machine. J. Ives.—p. 534.
Ulcerative Colitis: Clinical Experiments with Pig's Intestine. A. M. Gill.—p. 536.

Kala Azar Treated with 4:4′ Diamidinostilbene.—Somers says that until the introduction of 4:4′ diamidinostilbene in 1939 treatment of kala-azar in the Anglo-Egyptian Sudan had been most disheartening. The drugs in general use at the time were antimony tartrate, "neostibosan" and urea stibamine. During the last eight years the author has treated 26 patients with kala-azar in the Sudan; the first 21 were treated with either antimony tartrate or neostibosan. They died in the hospital or ran away before completing their treatment; none showed permanent improvement. The last 5 patients were treated with the urea derivative 4:4′ diamidinostilbene and responded favorably; 4 of them were alive and well when seen between eight and nine months after their apparent cure; only four months had elapsed since the fifth patient completed treatment when he was last seen. The drug was given at intervals of one to three days in doses gradually increased from 1 mg. to 4 mg. per kilogram of body weight. The total amount varied from 3.01 Gm. to 4.88 Gm.

Malaria as a Nonrelapsing Disease.—Rodger presents a survey which he undertook to test his belief that malaria is an easily curable disease and that its reputation for relapsing is often the result of reinfection. He made his observation in a copper mine of northern Rhodesia on a European population of 2,500, which, though living in a hyperendemic area where the parasite and spleen indexes are between 50 and 60 per cent in native children, is yet so well protected by antilarval and antimosquito measures that the average expectation of an attack is once in every seven or eight years. European employees, over 1,000 in number, are not permitted a day's stay off work without a medical certificate, nor can they return to work without a further certificate. No quinine is issued to employees except in the course of treatment. Blood smears are taken from every febrile patient, and no patient is treated for malaria until parasites are found in the blood. Every patient is treated in a hospital, and no one is allowed to rely on the casual and haphazard administration of quinine or atabrine. The present series covers five years. There were in all 1,619 cases of malaria in Europeans. These represented attacks in 1,157 persons, 842 of whom had only one attack. Thus 72.7 per cent of infected persons did not suffer a second attack in five years. Of the remaining 27.3 per cent a large proportion are probable reinfections and not relapses. Atabrine is given when there is a history of blackwater fever, quinine idiosyncrasy or previous irregular quinine administration over long periods. Plasmodium ovale infections require a course of quinoplasmoquine and some quartan cases also require some such combination.

Medical Journal of Australia, Sydney

1:286-308 (April 1) 1944

Experimental Diabetes. A. B. Corkill, P. Fantl and J. F. Nelson. —p. 285.
*Periarticular Fibrositis of Knee and Value of Local Analgesia. M. Kelly. —p. 286.
Hookworm Infestation. T. E. Lowe and H. O. Lancaster.—p. 289.
Further Observations on Direct Blood Transfusion. J. S. Guest and K. C. Bradley.—p. 292.

Local Analgesia in Periarticular Fibrositis of Knee.—Kelly maintains that pain in the region of the knee joint, when not due to mechanical derangements or to well defined disease such as tuberculosis or rheumatoid arthritis, will frequently be found associated with fibrositic lesions of adjacent muscles. Periarticular fibrositis can be differentiated from arthritis

because of the absence of redness, widespread tenderness and muscular atrophy, and there is little evidence of fluid in the joint. There is a well defined area of tenderness in muscle, and referred tenderness may be found over a greater or lesser area of the joint surface. The pain may or may not be accompanied by swelling; the range of movement usually is limited, though the degree varies. The pain may be worse on weight bearing, or the patient may complain bitterly of aching at night. The lesion may follow an injury, or it may appear spontaneously. The pain is felt more commonly on the inner side of the joint, and tenderness will be detected more frequently on the medial side. Injection of a local anesthetic into the joint capsule may counteract pain and restore mobility, but the relief is not lasting. Adjacent muscles should be searched for tender spots, and when these are anesthetized the tenderness of the capsule disappears and the relief is often permanent. In the great majority of instances the author has found muscular lesions on the inner side posteriorly. A number have been found in the inner fibers of the calf muscles behind the tibial condyle; but by far the commonest site is in relation to the inner condyle of the femur, at what the author terms the "adductor tubercle spot." Points of tenderness may be found along the upper border of the condyle, or a lesion may be found a little farther back in the fibers of the semimembranosus muscle. On deep infiltration of the lesions the tenderness of the whole internal aspect of the knee will disappear, together with other symptoms, such as pain on weight bearing and limitation of flexion. In many cases articular or periarticular swelling accompanied the other signs; if the treatment was successful in allaying the pain, the swelling subsided in the course of a few days. Manifestations of arthritis in some cases are brought about by a nervous reflex.

Practitioner, London

152:281-344 (May) 1944

Sulfonamides in Dermatology. H. W. Barber.—p. 281.
Scabies. H. MacCormac.—p. 291.
Causes and Treatment of Acute Dermatitis. J. F. Smith.—p. 297.
Acne Vulgaris. J. T. Ingram.—p. 304.
Skin Disorders in Newborn Infant. J. L. Henderson.—p. 310.
Therapeutic Use of Penicillin. L. P. Garrod.—p. 318.
Heredity of Blood Groups. R. M. Walker.—p. 324.
Treatment of Infections of Hand: Necessity for New Approach. D. Patey.—p. 329.

Praxis, Bern

32:791-810 (Nov. 11) 1943

Sulfonamide Nasal Ointment in Treatment of Head Colds. D. Schindler-de Wasilewska and A. Schnieper.—p. 791.
*Action of Chlorophyll on Healing of Wounds. Marie Louise Boehringer.—p. 793.

Action of Chlorophyll on Healing of Wounds.—Boehringer compared the healing effect of chlorophyll ointments of different concentrations with other ointments and an ointment base. Her experiments were made on rabbits. She found that chlorophyll ointment promotes the healing of wounds. The wounds dried more quickly, the granulations were stronger and healthier, epithelization was more rapid and the wounds shrank in size much better than when the other ointments were used. Whereas the control wounds nearly always showed inflammatory changes and were extremely sensitive to pressure, this occurred only exceptionally in the wounds treated with chlorophyll. The scars resulting after treatment with chlorophyll were easily movable on the base, whereas in the wounds treated with the other ointments adhesions with the underlying fascia were frequent. The ideal concentration of the chlorophyll ointment has not been ascertained. Concentrations of 0.01 and of 0.5 per cent effect a noticeable acceleration in wound healing.

Schweizerische medizinische Wochenschrift, Basel

73:841-864 (July 3) 1943. **Partial Index**

*Involvement of Internal Ear Due to Epidemic Parotitis: Case. A. Rodel.—p. 841.
Clinic and Therapy of B Hypovitaminosis. A. Kappert.—p. 844.
Pharmacologic Study of Sulfur. P. Darbellay.—p. 848.
Inauguration of New Teaching Method by the Faculty of Medicine at the University in Geneva. R. de Seigneux.—p. 855.

Involvement of the Inner Ear in Epidemic Parotitis.—Rodel advocates functional tests of hearing for all cases of bilateral swelling of the parotid and particularly for those of uncertain origin. The importance of this was well demonstrated in the case of a woman aged 48 who had had measles, scarlet fever, diphtheria, whooping cough and dysentery, but not mumps. A septicopyemic condition spreading from the parotid and a posterior pharyngeal abscess were the predominant features on her admission at the laryngologic clinic. Diagnosis of unilateral epidemic parotitis with mixed infection and secondary perforation of the parotid abscess into the external acoustic canal and into the posterior pharyngeal cavity was made. A sudden onset of neuralgic pain in the area of the facial nerve and of all three branches of the fifth nerve within twenty-four hours prior to the swelling of the parotid was considered as a premonitory sign of toxic-infective lesions of those cerebral nerves. The septicopyemic condition subsided after the removal of the posterior pharyngeal abscess by tonsillectomy, whereas the external incision of the parotid abscess had failed to control the infection. The involvement of the inner ear, demonstrated by the functional hearing tests, represented a meningeal complication of epidemic parotitis. Loss of hearing on the right side continued for some time. Paresis of the facial nerve occurred on the sixteenth day of the disease and continued for weeks without improvement. The destructive character of the suppurative inflammation of the parotid was considered responsible. Increase in the pressure of the cerebrospinal fluid (500 mm.) suggested primary irritation of the meninges. The functional hearing tests and the lumbar puncture clarified the diagnosis.

Bol. del Instituto de Maternidad, Buenos Aires

12:1-346 (Dec.) 1943. **Partial Index**

*Sulfonamide Therapy in Prevention of Infection in Cesarean Section in Contaminated Cases. A. Peralta Ramos.—p. 21.
*Obstetric Shock. R. Caso and J. J. Báez.—p. 160.
Endometriosis. A. Peralta Ramos and H. Mónaco.—p. 296.

Sulfonamide Therapy in Cesarean Section.—Peralta Ramos reports the results of cesarean sections on two groups of parturients, 429 and 69 patients respectively. The patients in both groups belonged to three grades of contamination, second, third and fourth degrees. Sulfanilamide or sulfapyridine powder 4 or 5 Gm. was applied to the peritoneum in the second group of patients. Mortality amounted to 3.49 per cent in the group not given sulfonamide and to 1.45 per cent in the treated group. The only patient who died in the sulfonamide group was a patient classified as representing the third degree of contamination. The patient died from generalized peritonitis. The effect of local application of the drug after cesarean section in infected cases is less favorable than that in other surgical interventions. The less favorable effect is due to the functional lability of the hepatic and renal systems in pregnancy and to the difficulties in identifying the causal bacteria of the infection. Local application of sulfanilamide, reinforced in certain cases by oral administration of the drug, is of value after cesarean section in contaminated cases. Hysterectomy is indicated only in very grave cases of acute uterine infection.

Obstetric Shock.—Caso and Báez report 5 cases of obstetric shock. They believe that obstetric shock is vasogenic. The most frequent form is that which follows acute hemorrhage. Adrenal dysfunction and imbalance of the sympathetic nervous system are the main causal factors. Preventive therapy consists in proper antepartum care and of administration of adrenal cortex extract if there are symptoms of adrenal insufficiency. The therapy of shock is one of emergency. It consists in plasma or blood transfusion and the treatment of the associated gynecologic and general disorders. Plasma is indicated in posthemorrhagic shock, provided the amount of hemoglobin is not greatly diminished. Blood of the O group is used in blood transfusion when the latter follows administration of plasma. Heart tonics are interdicted. Vasoconstrictive drugs are unnecessary after plasma or blood transfusion because of the spontaneous peripheral vasoconstriction which follows either plasma or blood transfusion. Morphine is contraindicated if there is cyanosis.

Book Notices

Minor Surgery. By Frederick Christopher, S.B., M.D., F.A.C.S., Associate Professor of Surgery at Northwestern University Medical School, Chicago. Fifth edition. Cloth. Price, $10. Pp. 1,006, with 575 illustrations. Philadelphia & London: W. B. Saunders Company, 1944.

This is a splendid book on minor surgery containing an enormous amount of information. It has an extensive bibliography, which is well chosen and up to date. The author quotes freely from medical literature but now and then presents perhaps too many ideas on a given point. The discussion on varicose veins might be considered an example of too many views without specific recommendations of any one as being preferable. In general, the reviewer agrees entirely with the author in presenting more than one view when the subject is controversial and sound arguments and good minds are on both sides. Most of the illustrations are borrowed but well chosen. Even the best books have a few weak spots. On page 4 the author has included a brief discussion on the local application of chemical agents to contusions. Although no claims are made for these, it would appear just as well to eliminate them entirely. Important subjects such as burns and wounds have been covered splendidly and in proper detail. Chapter XXIII, dealing with the technic of numerous methods of hospital care, including fluid administration and transfusion, should be particularly valuable to the intern. This material has been made up to date, even including a short discussion on the Rh factor in blood grouping and blood transfusions. The reviewer agrees that the limitation of the discussion on bandaging to five or six pages is appropriate. Chapter XXIV, dealing with preoperative and postoperative care, is likewise particularly valuable to the surgical intern but could be read profitably by any surgeon. The last chapter, which has been directed primarily to the intern, includes discussion on the conduct and responsibilities, which are seldom considered in medical literature. This book continues to be one of the best in the field and can be read profitably by any one in the medical profession.

The Adrenal Glands in Health and Disease. By Max A. Goldzieher, M.D., Endocrinologist, St. Clare's Hospital, New York City. Fabrikold. Price, $8. Pp. 727, with 81 illustrations. Philadelphia: F. A. Davis Company, 1944.

This volume, written by a man who has devoted most of his professional lifetime to a study of the adrenal glands, is of real value to any student in clinical endocrinology or clinical pathology. There has been an interval of eight years since a comprehensive treatise on the adrenals by Grollman was published. During that time much new investigative work and clinical experience in the management of Addison's disease has appeared. In the current volume the author has presented a careful documentation of the entire field and has studied the adrenal cortex and medullas from the points of view of embryology, anatomy, physiology, biochemistry and clinical management of disorders of the glands. His own points of view are presented with modesty and without failing to point out differences of opinion and the points of view which are held by numerous other modern students in this field. In the sixty chapters of this book one will find discussion of correlation between the adrenals and almost any aspect of physiology or of clinical medicine which can be considered significant in any way. References to the literature are given chapter by chapter, with definite reference to the authority for all questionable statements. A twenty-three page index adds greatly to the usefulness of the book. The paper, the typography and the reproductions of the illustrations are excellent. The author is to be congratulated on an enormous task well done.

Six Thousand Years of Bread: Its Holy and Unholy History. By H. E. Jacob. Cloth. Price, $4.50. Pp. 399, with 68 illustrations. Garden City, New York: Doubleday, Doran and Company, Inc., 1944.

Man must eat to live. In his desire to survive, the word "bread" has become synonymous with survival. This book gives the story of bread in its religious, political and technical aspects over a period of six thousand years. The author consulted a vast bibliography. His record of six thousand years ends with a recognition of the necessity for feeding a starving world in the postwar period if mankind is to survive. No better quotation could be selected to indicate the significance of this work than that from ex-President Hoover, who said in May 1943 "The first word in a war is spoken by the guns—but the last word has always been spoken by bread."

The Brush Foundation Study of Child Growth and Development. I: Psychometric Tests. By Elizabeth Ebert & Katherine Simmons. Monographs of the Society for Research in Child Development, Volume VIII, No. 2 (Serial No. 35). Paper. Price, $1.50. Pp. 113, with 19 illustrations. Washington, D. C.: Society for Research in Child Development, National Research Council, 1943.

This is the first of a series of reports of a study of growth and development of children, originally organized and directed by T. Wingate Todd. Periodic examinations, including psychometric tests, anthropometric determinants and roentgenograms, have been made. A selected group of presumably "normal" (probably, as a group, "superior") children were examined between the ages of 3 months and 15 years. The report covers ages 2 to 15 years. Constancy of intelligence tests, constancy and relation of performance tests to tests of intelligence, the prediction of scholastic achievement by earlier psychometric tests, and sibling resemblances are reported. To select items of clinical interest, it is reported, "there are children whose mental test standard scores show decided decelerating trends and accelerating trends which apparently are independent of test standardization and peculiar to the individuals." Further, a superior intelligence quotient does not offer assurance that educational achievement will be at a correspondingly high level. These observations point toward problems of psychiatric import not otherwise dealt with in the study. This important study, in the form published, is of interest to the research worker in child development; one will await with interest clinical elaboration in connection with the later studies of the series.

The Jews and Medicine: Essays. By Harry Friedenwald, M.D., D.H.L., D.Sc. Volumes I and II. Publications of the Institute of the History of Medicine, The Johns Hopkins University, First Series, Monographs, Volumes II and III. Cloth. Price, $3.75 per volume. Pp. 390; 391-817, with 40 illustrations. Baltimore: Johns Hopkins Press, 1944.

These two volumes represent the collected essays of a distinguished medical historian and scholar. Many of the essays have previously appeared in the *Bulletin of the History of Medicine* from the Johns Hopkins Institute of Medical History and others in a wide variety of medical publications, such as the *Annals of Medical History*, the *Medical Pickwick*, *Medical Life* and *Medical Leaves*. For those especially interested in the field concerned, it is delightful to have these collected essays readily available. Particularly valuable is the list of eminent Jewish physicians of the Middle Ages, with brief biographic notes and bibliography.

Ventilation and Heating: Lighting and Seeing. Conditions for Industrial Health and Efficiency Pamphlet No. 1. Issued by the Industrial Health Research Board of the Medical Research Council. Paper. Price, 3d. Pp. 20, with 11 illustrations. London: His Majesty's Stationery Office, 1943.

This pamphlet outlines the main facts known about ventilation, heating, lighting and seeing that should be applied to industrial establishments. It is written in a nontechnical manner for the industrial manager or worker to aid primarily in the problems arising from complete blackout of plants in England. The presentation describes practical procedures that may be used in any installation.

The Use of Penicillin in Treating War Wounds. (Instructions Prepared by the Penicillin Clinical Trials Committee). Medical Research Council, War Memorandum No. 12. Paper. Price, 10 cents; 3d. Pp. 16. New York: British Information Services; London: His Majesty's Stationery Office, 1944.

This pamphlet was prepared by the Penicillin Clinical Trials Committee of England for the purpose of providing instructions for the use of penicillin in war wounds. It contains an adequate outline of the methods of administration and preparation of penicillin for clinical use, and specific instructions are given for its application in various types of wounds. The content is sound and accurate. Every one interested in penicillin will profit from reading this booklet.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

PRESENT MORTALITY RATES OVER AND UNDER AGE OF FIFTY

To the Editor:—Recently I saw a statement that the mortality rate of persons over 50 years of age had increased 10 per cent since the declaration of war and that even with the casualties in the battle zones or with all war casualties the mortality rate of the younger people, or those under 50, has remained approximately the same. Are there definite statistics concerning this?

D. D. Sanderson, M.D., Lincoln, Neb.

ANSWER.—According to the provisional mortality figures of the United States Bureau of the Census based on a 10 per cent sample of death certificates, there has been an increase of a little over 4 per cent in the death rate for the population 50 years and over in 1943 as compared with the corresponding rate for 1941. The mortality rate for the age group under 50 years showed a slight decrease in 1943 from the corresponding rate in 1941. These comparisons do not include deaths among military personnel occurring outside the continental United States. Although exact data on war casualties are not available, the relative increase in the death rate for the population under 50 years of age would probably not be greater than the 4 per cent increase observed for the age group 50 years and over if deaths among American soldiers abroad are taken into consideration.

AUTONOMOUS BLADDER AFTER SECTION OF NERVE ROOTS

To the Editor:—An exploratory operation on the sacral canal to determine the cause for intractable sciatic pain was performed about ten months ago on a woman aged 62. The only condition of a pathologic nature found was a chronic inflammation of the nerve roots. The second and third sacral roots on the left and the second sacral root on the right were severed. Following the operation, urinary incontinence developed. For the past two months the incontinence has ceased while the patient is in bed. However, on assuming the erect posture, there is an almost immediate flow of urine. The bladder does not seem to be completely paralyzed, since the patient can voluntarily express urine. A cystocele is present; residual urine analysis, which at first showed innumerable white cells, has been normal for the past three weeks. Catheterization, which was practiced frequently some months ago, has been discontinued. May I have an opinion concerning the prognosis and treatment?

M.D., New York.

ANSWER.—The results of the exploratory operation are similar to those which follow complete section of both pelvic nerves. The result is similar to that found in a lesion of the conus medullaris, or reflex center of the sacral cord. The present condition may be described as an autonomous bladder. It is difficult to make an accurate diagnosis from the data given without determining the amount of residual urine remaining in the bladder after the patient has strained to void all that is possible. It would be advisable to empty the bladder with a catheter and later determine how long the patient can hold the urine before the so-called incontinence appears. The incontinence might be an overflow incontinence. It is also suggested that cystoscopy be made to determine whether or not the bladder is hypertonic and trabeculated, as it should be with an autonomous bladder. It seems hardly probable that the cystocele is a factor in the patient's condition.

If such a condition is present, about the only thing that could be done would be to train the patient to void at intervals, using abdominal straining and manual compression of the bladder. In this way the amount of urine in the bladder could be kept below the level at which the so-called incontinence occurs. Should secondary infection be present, sulfonamide medication at intervals may be indicated.

BURNS AND RHEUMATOID ARTHRITIS

To the Editor:—In a case of infective arthritis following severe burns a claim has been filed. I would appreciate any reference in the literature to sequelae of this nature following burns.

D. J. Fraser, M.D., Winnipeg, Man.

ANSWER.—A severe burn might operate in two ways to induce arthritis: (1) by virtue of the excessive demands made on the central defense mechanism of the body and (2) by virtue of the secondary infection which develops on the burned surfaces. In rheumatoid or atrophic arthritis, infection may act as a precipitating factor and the modern view is that the arthritic phenomena probably represent a psychosomatic reaction, presumably through the mediation of the neuroendocrine system. In the present war cases of rheumatoid disability are developing on the apparent basis of the strain and tension involved in army service. In the last war, exposure and such conditions as dysentery induced rheumatoid arthritis, which sometimes developed only after considerable delay. It is worthy of note also that in the last war patients who developed arthritis gave a history of previous attacks with a frequency five times greater than was observed in cases admitted to the medical service at large. A severe burn can therefore be regarded as a precipitating factor, acting on soil presumably somewhat susceptible to rheumatic disease to produce the full picture of rheumatoid arthritis.

IMMEDIATE TREATMENT OF CARBON TETRACHLORIDE INGESTION

To the Editor:—A woman aged 40 drank a large amount of carbon tetrachloride fluid. She was immediately given gastric drainage and lavage, and this was followed by saline cathartics. Our question is, as this substance is highly soluble in oils, could liquid petrolatum be given to the patient? My associates feel that the oil is so poorly absorbed that it would be evacuated before significant absorption has occurred. However, I believe that there is considerable absorption as evidenced by the oil in the lymph glands of the mesentery as seen on autopsy, especially in those who have had considerable quantities at one time or for some period of time.

David E. MacQuigg, M.D., Albany, N. Y.

ANSWER.—Liquid petrolatum is effective in decreasing gastric absorption of carbon tetrachloride only if it is administered promptly. If any considerable time elapses between the swallowing of carbon tetrachloride and the administration of liquid petrolatum, little antidotal effect can be expected. In any event it is important to wash out the stomach thoroughly, employing oils such as liquid petrolatum or vegetable oils (olive oil, cottonseed oil, salad oil) and to follow gastric lavage with a saline cathartic. The administration of liquid petrolatum only shows absorption of carbon tetrachloride, and any of the poison which has passed the pylorus will unquestionably be absorbed in spite of the use of oily antidotes.

CONCEPTION AFTER ECTOPIC PREGNANCY

To the Editor:—What successes or failures in becoming pregnant have been achieved following ectopic pregnancy which has necessitated removal of one ovary and tube? What are the percentages of recurrences of ectopic pregnancy?

M.D., New York.

ANSWER.—Statistics from various clinics indicate that among women who have had one tube and ovary removed because of ectopic gestation (that is, in whom there is a theoretical possibility of future conception), about 35 per cent subsequently become pregnant. Of those who do have a subsequent pregnancy, 10 to 15 per cent have another ectopic pregnancy. Stated differently, among 100 women who have had one tube and ovary removed because of ectopic gestation, about 65 women would not conceive at all, about 30 would become pregnant with normal intrauterine gestations, while 4 or 5 would experience another ectopic pregnancy.

CHRONIC UNDULANT FEVER

To the Editor:—Has penicillin been used successfully in the treatment of undulant fever? What seems to be the most satisfactory treatment for this disease? The patient is ambulant, has an afternoon fever and complains of lassitude and weakness; she has been in this stage for about two years but has been slightly worse lately.

Leonard Nelken, M.D., Clinton, Iowa.

ANSWER.—Penicillin has had no effect on the course of undulant fever. There is no really satisfactory treatment for this disease. Occasionally, sulfadiazine has been found beneficial. An effort should be made to discover a chronic focus of infection, particularly in the biliary tract, which would be amenable to surgical treatment. Some consideration should be given to the possibility that the patient's symptoms are caused by some other disease.

THERAPY FOR COLD HANDS AND FEET

To the Editor:—In the June 3, 1944 issue of The Journal there was on page 390 an inquiry about cold hands and feet in a girl aged 19. I agree with the answer as far as the neurologic differential diagnosis is stressed. The cervical rib, Raynaud's syndrome and thromboangiitis obliterans should always be excluded. Assuming that the results are negative, however, I would not begin by considering cervical sympathectomy. One should begin with one of the following: relaxation therapy as described by Edmund Jacobson, 1938, University of Chicago Press, wake suggestion or hypnosis. The first two may be used as a preliminary for the third, if necessary. The results are encouraging and lasting, and they can be reached without even taking the patient to a warmer climate. The same, incidentally, holds for cold feet and neurotic red ears and hot head in younger persons.

Wladimir Eliasberg, M.D., New York.